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Varieties of Strawberries
for a Select Market

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VARIETIES OF STRAWBERRIES

FOR A

SELECT MARKET

by

ROY HAROLD LONG

THE S I S

for the

DEGREE OF BACHELOR OF SCIENCE

in

HORTICULTURE

in the

COLLEGE OF AGRICULTURE

of the

UNIVERSITY OF ILLINOIS

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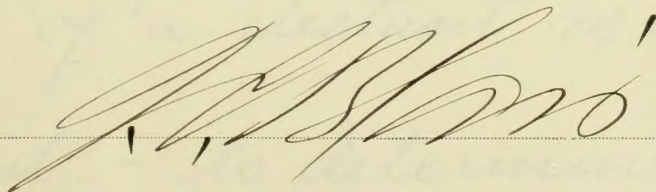
THIS IS TO CERTIFY THAT THE THESIS PREPARED UNDER MY SUPERVISION BY

ROY HAROLD LONG

ENTITLED VARIETIES OF STRAWBERRIES FOR A SELECT MARKET

IS APPROVED BY ME AS FULFILLING THIS PART OF THE REQUIREMENTS FOR THE DEGREE

OF Bachelor of Science



HEAD OF DEPARTMENT OF Horticulture

UNIVERSITY OF ILLINOIS

1906

June 1,

THIS IS TO CERTIFY THAT THE ABOVE NAMED PERSON HAS BEEN GRANTED A

ROY HAROLD LONG

DEGREE OF BACHELOR OF SCIENCE IN THE DEPARTMENT OF AGRICULTURE

IN WITNESS WHEREOF, I HAVE HEREUNTO SET MY HAND AND SEAL OF OFFICE

at Champaign, Illinois, June 1, 1906

[Handwritten signature]

DEAN OF THE DEPARTMENT OF AGRICULTURE



Subject.

Varieties of Strawberries
for a Select Market.


Object.

The object of this thesis is
three fold:

First:- to determine which
varieties of strawberries are best
adapted to meet the demands
of my local market at Lexing-
ton Illinois.

Second:- to determine
which varieties of strawberries
are best adapted to meet the
demands of a distant market.

Third:- to determine which
varieties of strawberries are best
adapted for extending the
marketing season, both prev-
ious to and after the main
crop.



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Plan.

2

To attain this three-fold object a test bed of 44 varieties was planted. The table of contents is the plan of this thesis and tabulates the topics upon which it was considered essential that descriptions or data be secured.

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Location.

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The site where the investigation, reported in this thesis, was carried on is in the north-west quarter of the north-east quarter of Section Eighteen (18) of Lexington Township, McLean County, Illinois.

History.

The land has been farmed in oats and corn for more than twenty years. It was formerly covered by natural timber which consisted principally of burr oak, hard maple, black walnut and a few American elms.

Surroundings and Slope:

The surrounding land is moderately rolling. The test bed was on a piece of ground which is uniform in composition and has a uniform and gentle south slope, giving good water and air drainage.

Soil.

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Physical Analysis.

The soil is a Miami silt loam, the mechanical analysis of which is given in table I.

Table I Physical Analysis of Test Bed Soil.

	Surface	SubSurface	SubSoil
Loss by Ignition.	5.005	2.425	4.8345
Hydroscopic H_2O .	3.660	2.065	1.5650
Silt and Clay.	33.180	33.445	55.5800
Fine Sand.	53.815	57.320	37.4250
Coarse Sand.	5.860	3.565	2.7800

This soil was analysed by myself in the Soil Physics Laboratory of the Illinois College of Agriculture, during the first half of the second semester of 1903-1904. The work was done under the direction of Professor J. G. Mosier and Mr. L. Willis.

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All data in table I is in terms of percentage by weight.

"Loss by Ignition" is a good index to the amount of organic matter in the soil. "Hygroscopic H_2O " is a good index to the soil's power of retaining moisture.

The other terms are self explanatory. "Surface" includes a sample of soil taken from the surface to a depth of seven inches. "Sub-Surface" includes a sample taken from seven to sixteen inches.

"Sub Soil" includes a sample taken from eighteen to forty inches in depth.

Table I shows that this soil has considerable organic matter, sand and clay, and also that it has a clay subsoil.

Chemical Analysis.

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In April of 1903 I sampled and made a chemical analysis of this soil according to the methods followed by the Illinois Agricultural Experiment Station. This work was done under the direction of Mr. L. G. Hopkins and Mr. J. H. Pittit. Table II gives the date of this analysis.

Table II.

Chemical Analyses of Test Bed Soil.

	Per Cent.	Average.	Pounds per acre.
Dry Matter	A 91.100	91.183	
"	B 91.266		
Insoluble	A 77.840	77.52	
"	B 77.200		
Aluminium ^{Al₂O₃}	A 3.3463	3.4363	68,726.00
"	B 3.5262		
Calcium ^{CaO}	A 1.200	1.225	24,500.00
"	B 1.250		
Magnesium ^{Mg₂P₂O₅}	A 2.075	2.0625	41,250.00
"	B 2.050		
Phosphorus ^P	A 0.1737	.074712 P. .1737 ₂₀	1494.25 ^{P.}
"	B 0.1737		
Iron Oxide ^{Fe₂O₃}	A 3.1750	3.160	62,000.00 ^{Fe₂O₃}
"	B 3.125		
Sodium ^{Na₂O}	A .0335	.03275	655.00
"	B .0320		
Potassium Oxide ^{K₂O}	A 1.0765 _{K₂O}	.4717 ₁₁	9,435.44 ^K
"	B 1.0335		
Nitrogen ^N	A .36391	.36391	7,278.20 ^N

There are three items¹¹ in table II which are worthy of special comment. They are the amounts of Nitrogen, Phosphorus and Potassium contained in this soil. These amounts can be found in condensed form in column "C" of table III. Columns "A" and "B" are taken from Circular 68 by Dr. C. G. Hopkins of the Illinois Experiment Station. Column "A" gives the amount of Nitrogen, Phosphorus and Potassium in an average fertile soil of the United States. Column "B" gives the amount of the same elements in the Wisconsin Glaciated Prairie soil which is the richest general soil known in the "corn belt." Column "C" gives the analysis of the soil upon which this strawberry test was made. All this data is based upon the number of pounds of the various

elements in the first seven in-¹²
ches of soil, taking 2,000,000
pounds as the basis for cal-
culation. Table III gives a
very good basis for comparison.

Table III.
Comparative Fertility of Soils.

	A	B	C
	W. U.S. so per acre.	Wis. Glac. Prairie.	Test Bed.
Nitrogen	5600	6200	7278
Phosphorus	2000	1600	1494
Potassium	6600	8800	9435

It is to be noticed that the
test bed contains about one sixth
($\frac{1}{6}$) more nitrogen than the richest
general type of prairie soil of
the corn belt. Also that it is
abundantly supplied with Pot-
assium for it exceeds the content
of the Illinois Prairie soil by
Six hundred and thirty-five (635)
pounds in that element.

In Phosphorus it is lacking. It contains one hundred and six (106) pounds less Phosphorus than the best prairie soil, yet it is about three hundred (300) pounds better than the average Wisconsin moraine Glaciation which constitutes the University of Illinois experiment plots. That this soil is unusually high in Nitrogen and Potassium and relatively low in Phosphorus may be accounted for by the fact that this ground has been heavily cropped for the last twenty (20) years, but also has received numerous applications of manure taken from the livery stables of the nearby town of Lexington. While a ton of average manure adds ten (10) pounds of Nitrogen and Potassium each, it adds only two (2) pounds of Phosphorus to the soil. Thus the original supply of Nitrogen and Potassium

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have been maintained or perhaps increased, because the land is producing larger crops than ever before, while the Phosphorus content is undoubtedly constantly diminishing.

While this is not a thesis upon the fertility of this soil, yet it is considered essential to prove that this soil possesses no abnormal qualities or conditions which in any way are liable to produce detrimental factors or results in this experiment.

Performances.

Another evidence that this soil and location are suitable for strawberries is that for nine years excellent crops of strawberries have been grown upon adjacent ground. This test bed is in the north west corner of a field which has been producing crops of



oats averaging sixty (60) bushels¹⁵
and crops of corn averaging
seventy (70) bushels per acre.

From the mechanical
analysis, from the Chemical
analysis and from its known
performances for the last
twenty (20) years the conclusion
is drawn that this soil is
well adapted for this exper-
iment and that while it
might be brought to a still
higher productive capacity by
the addition of some phosphatic
fertilizer yet all evidences
prove that this soil, is fully
as fertile as ~~that of~~ the average
soil of the corn belt.

From the above statements
the conclusion may be drawn
that whatever results are
obtained from this experim-
ent are indicative of what
may be expected from all
typical and well tilled soils of
the corn belt.

Preparation of soil.

16

No elaborate or special preparation was given this soil. The year previous (1903) to planting the test bed the soil was planted to corn. In the spring of 1904 the ground was plowed five inches deep, disced twice and harrowed twice. When the plants arrived, furrows four feet apart and about four inches deep were made with a small plow.

Care of Plants During First Season.

Plants.

The plants were bought of R. M. Kellogg of Three Rivers, Michigan, in the spring of 1904.

The order called for plants in lots of fifty to one hundred and fifty. The count was very inaccurate though always 2

17
above the order. This accounts
for most of the irregularity in
the number of plants per variety.
The plants were small but with
one exception they proved to be
strong and vigorous. Of the
variety *Maximus*, only eight
plants lived and such a small
number is hardly enough to make
a reliable test.

Planting.

The plants were set four
by forty-eight (4" x 48") inches and
no runners were allowed to
exhaust the plants. The season
was one of very little rain yet
all did well and made good grow-
th except *Maximus*.

Because of the abundance of
bees and the large adjacent area
of strawberries, it was consider-
ed unnecessary to place pis-
tillate between staminate



varieties. Therefore the var¹⁸
ieties were planted just as
they happened to be unpacked.
Six varieties were planted in
each row and the final results
indicate that all varieties were
well pollenized.

Cultivation.

The test bed was cultivated
every ten or fifteen days
with a Planet Junior cultivator
which stirs the ground with
the thoroughness of a harrow
to a depth of two to three inches.
Two or three times during the
season the soil was cultivat-
ed about four inches deep with
a field cultivator to keep the
it well loosened and to
prevent excessive surface root-
ing.

Spraying.

19

The plants were sprayed three times during the growing season, not because they showed signs of insect or fungus infection but simply as a preventative. All varieties were in good condition at the time of covering.

Winter Covering.

November 20, 1904, the entire test bed was given a coating of oat straw three inches in depth.

Spring Uncovering.

April 10, 1905, the straw was removed from the row and three weeks later when the plants had made considerable growth straw was pushed closely around each

plant by hand to prevent²⁰
possible loss of fruit.

Varieties.

Table IV gives the names and corresponding number of the forty four (44) varieties used in this experiment. Each variety was marked by a stake two inches square and twenty-four inches long. The stakes were painted white and the number which appears opposite the name in table IV was painted in red on the stake. No plants were allowed to grow thick within twelve inches of a stake. Thus all possibility of varieties becoming mixed was prevented. "P" after a name means that the variety is a pistillate variety. "B" after a name means that that variety possesses both pistils and stamens.

Table IV.

Name and Number of Varieties.

Variety Number	Name	Variety Number	Name
1	Buback.	23	Rough Rider B
2	Nick Ohmer B	24	Clyde B
3	Miller B	25	Parker Earle ^{proved} m p B
4	W ^m Belt B	26	Sample P
5	Warfield B	27	Crescent P
6	Bismark B	28	Lovett B
7	Wolverton B	29	Parker Earle B
8	Parson's Beauty B	30	August Luther B
9	Klondike B	31	Seaford P
10	Marshall B	32	Palmer B
11	Glen Mary B	33	Ridgeway B
12	Monitor B	34	Kansas P
13	Aroma B	35	Michel's Early B
14	Enormous P	36	Up-to-Hate B
15	Haverland P	37	Benderwood B
16	Splendid B	38	Worman B
17	Johnson Early B	39	Senator Dunlap B
18	New York B	40	Hero B
19	Gandy B	41	Lady Thompson B
20	Brandywine Ill B	42	Excellor B
21	Brandywine Mich B	43	Maximus B
22	Cumberland B	44	Tennessee Prolific B

Picking of Fruit.

22

The picking was done by four of my regular pickers, three of whom have been with me for five years, the other one for two years. The berries were picked into four-quart carriers. Each picker carried a pencil and numbered each of the quart boxes according to the number of the variety he was picking. As soon as a variety was finished all the quart boxes were placed in ^{27 quart} a crate which when full was taken to the cellar, some two-hundred yards from the test bed, and there ^{the berries were} graded by Mr. Lynn Franklin who had been employed as "grader and picker" during two previous seasons. All the picking was done under my personal direction. When picking was completed I

helped Mr. Franklin grade²³ the fruit. The fruit was picked every second day excepting on Sunday when the interval would be three days² instead of two.

Grading of Fruit.

The entire crop was graded by the following schedule which included five grades.

Grade #1. = Exhibition specimens. This^{grade}₁ includes all perfect berries two inches or more in diameter.

Grade #2. = Fancy fruit, which includes all perfect berries one and one half to two (1.5-2) inches in diameter.

Grade #3. = Average fruit, which includes all perfect berries seven eighths to one and one half

($\frac{7}{8}$ - 1.5) inches in diameter. 24

Grade #4. - Below average fruit, including all perfect berries five eighths to seven eighths ($\frac{5}{8}$ - $\frac{7}{8}$) inches in diameter and all other saleable but imperfect fruit.

Grade #5. = Culls, and includes all berries less than five eighths ($\frac{5}{8}$) inches in diameter and all unsaleable fruit.

To insure accuracy in grading a curd board with circular holes the exact diameter of the various grades was made. Plate I is a photograph of this "grader." Many of those who were interviewed on the matter thought it absurd to make provision for procuring data upon any considerable amount of fruit ~~to be~~ too large to pass through the largest circle.

Reference to table V shows²⁵ that 5.6% of the W^m Belt berries were too large to pass through circle II. See plate I on page .

Grade #2. - Fanny, includes all perfect berries too large to pass through circle III which is one and one half (1.5) inches in diameter, but will go through circle II which is two inches in diameter.

Grade #3. - Includes all perfect fruit too large to go through circle II which is seven eighths ($\frac{7}{8}$) inches in diameter but will pass through circle III which is one and one half (1.5) inches in diameter. Such fruit will pass on the market without dispute as number one fruit. Such fruit has sold for two to two and one half (\$2. - \$2.50) dollars per twenty-four quart crate on the local market^{of Lexington} for years.

Grade #4 includes all unsaleable berries which are too large to pass through circle V which is five-eighths ($\frac{5}{8}$) inches in diameter but will pass through circle IV which is seven eighths ($\frac{7}{8}$) inches in diameter.

This grade includes also all deformed and imperfectly polished berries which in size might belong to grades one, two or three but through some imperfection were deformed or distorted in any way. Yet polination was so perfect and all disturbing factors so slight that this makes no appreciable difference in the final results. Berries of this grade have sold as second class ^{the making of} for jam purposes and sell at one to one and one half (\$1.50) dollars per crate.

Grade #5 includes all worthless or unsaleable fruit known as culls, also all berries

so small as to pass through circle V which is five eighths ($\frac{5}{8}$) inches in diameter. Furthermore this grade includes all berries which rotted or dried up before ripening. This type of fruit was included because it draws upon the vitality of the plant and is trouble-some to pickers and packers. The Benderwood illustrates this point by producing ten percent of grade number five which makes five hundred and nine (509) quarts of worthless berries per acre.

Field Records.

Table V gives the field record of the various varieties. The records are arranged in the same order as they are numbered in the test bed. Each page of table V contains the field record of two varieties. The

field records are constructed²⁸
and are to be interpreted in the
following manner.

On the first line are given
the number and name of the
variety. On the second line
appear the grades one, two,
three, four and five. Reading
from left to right on the line
bearing any desired date, may
be found the record of each
grade of each variety for that
date. For illustration take
variety #1, the Bubach. On June
7th, from that variety there were
picked no #1 grade berries; only
two berries which were large
enough to grade as #2; while
there were $2\frac{7}{8}$ quarts of berries
large enough to grade as #3,
all of which were at most large
enough to be classed in grade #2,
which is designated by the letter
"b" in the upper right hand corner
of the square. The letter "g" in the
lower right hand corner desig-

notes that the quantity was in ²⁹ quarts and not individual berries. The letter "s" designates the opposite of letter "b" and means that the fruit was small for that grade and was just a little too large to be in the grade below. When the quantity of berries was less than one eighth ($\frac{1}{8}$) quart, the berries were counted. Continuing with the illustration, we find that there were three fourths ($\frac{3}{4}$) ^{quart} of number #4 grade fruit and ten berries of grade #5. These ten berries were rotten as is designated by the letter "r". The line bearing the word "totals" gives the sum in quarts of berries of the various grades picked from that variety throughout the season. The line bearing the words "grand total" gives the amount of all grades produced throughout the season. The line bearing "# of Plants"

designates the number of plants³⁰ in each variety from which fruit was picked. This data was obtained by an actual count of the individual plants. The count was made near the end of the picking season when all plants were in bearing. All crowns, whether they were one or many, if they came from one separate root system constituted one plant. The data on the line "qts. per Plant" is obtained by dividing the number of grand total quarts by the number of plants. The number of "qts. per acre" was obtained by multiplying the "qts. per Plant" by 27,750 which represents the number of plants which would constitute an acre when in rows three feet apart with one plant every eight inches in the row. This method has been practiced with success for several years. The data

for "crates per acre" was derived³¹
by dividing "quarts per acre" by
twenty-four. Opposite the
grade numbers is given the
percentage of the total crop
each grade constituted.

A comparison of the
total yields of these forty-four
(44) varieties shows that some
are profitable and that others
would not pay expenses. Also
that while in some varieties
almost the total crop was
saleable there were other va-
rieties of which more than half
the crop was unsaleable on
account of inferiority of size.
Although table V almost speaks
for itself further discussion of
its contents will be reserved until
its relative importance can be
weighed with other factors which
also enter into consideration when
selecting varieties of strawberries.
The data of table V was secured ~~as it~~
~~is~~ to obtain, if possible, a more

definite and accurate knowledge³²
as to which varieties are the
greatest yielders of high grade
marketable fruit, and second,
to arrive at the exact reason
why some of the heavy yielders
are not a financial success.
This table shows whether or
not the variety fails because
of light yield or because of
small size of berries.

Table V Field Records.³³

Variety	Grade	#1 Bubach					#2 Nicklchner				
		1	2	3	4	5	1	2	3	4	5
May	31		1	7 ^b							
June	2	2	2 $\frac{1}{4}$ g	1 $\frac{1}{8}$ g					4		
"	5			1 $\frac{1}{8}$ g	2 $\frac{3}{4}$ g		1 ^b	1 $\frac{1}{8}$ g	1 $\frac{3}{4}$ g ^b	5 $\frac{2}{8}$ g	
"	7		2	2 $\frac{7}{8}$ g	3 $\frac{1}{4}$ g	10r	4 ^b	2g	10	5r	
"	9			3 $\frac{1}{4}$ g	1 $\frac{1}{4}$ g	2r	1	5 $\frac{1}{8}$ g	6		
"	12			3 $\frac{1}{4}$ g	1 $\frac{1}{2}$ g	2r	1	15 $\frac{1}{8}$ g	1 $\frac{1}{2}$ g	10r	
"	14			5 $\frac{1}{8}$ g	1 $\frac{1}{2}$ g	4r		13 $\frac{1}{8}$ g	1 $\frac{1}{2}$ g	15r	
"	16			1 $\frac{1}{4}$ g	1 $\frac{1}{8}$ g	5r		3 $\frac{1}{4}$ g	5 $\frac{1}{8}$ g	10r	
"	19					1 $\frac{1}{8}$ g	1	6	8	6	
"	22				2	6		7	8		
totals		7 $\frac{1}{8}$	2 $\frac{3}{8}$	8	5	1 $\frac{1}{8}$	7 $\frac{1}{8}$	7 $\frac{1}{8}$	5 $\frac{7}{8}$	6 $\frac{1}{8}$	
grand total						16 $\frac{1}{8}$				11 $\frac{1}{8}$	
# of Plants						105				95	
gts per "						.1536				.121	
" " wire						3345.4				2720.0	
crates "						139.3				113.3	
Per cent of grade 1						1.55				0.0	
" " " 2						14.72				4.1	
" " " 3						49.6				60.0	
" " " 4						31.0				29.4	
" " " 5						3.8				6.2	

Table V cont.

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Variety	#3 Miller					#4 Wm Belt.				
	1	2	3	4	5	1	2	3	4	5
June 2								3 ^b	3	
" 5			$\frac{1}{4}g$			$\frac{3}{4}g$	$\frac{1}{4}g$	3		
" 7	1	1	$2\frac{1}{4}g$	10	10		$\frac{3}{4}g$	$1\frac{3}{4}g$	10	
" 9			$\frac{5}{8}g$	$\frac{1}{8}g$	5 ²	3	3	$\frac{3}{4}g$	$\frac{1}{8}g$	
" 12			$2\frac{1}{4}g$	$\frac{1}{2}g$	$\frac{1}{4}g$		$\frac{7}{8}g$	$2\frac{1}{4}g$	$\frac{1}{4}g$	$\frac{1}{4}g$
" 14			$1\frac{3}{4}g$	$\frac{5}{8}g$	$\frac{1}{2}g$		1	$2\frac{5}{8}g$	$\frac{3}{4}g$	$\frac{1}{2}g$
" 16			$\frac{3}{4}g$	$1\frac{1}{4}g$	$\frac{1}{2}g$		4	$1\frac{1}{2}g$	$1\frac{1}{2}g$	4
" 19			6	$\frac{1}{4}g$	10			$\frac{1}{4}g$	$\frac{3}{4}g$	$\frac{1}{8}g$
" 22				20					$\frac{1}{4}g$	10
" 24								2	6	
totals	$\frac{1}{8}$	$\frac{1}{8}$	8	$3\frac{1}{8}$	$1\frac{3}{8}$	1	$2\frac{1}{8}$	$7\frac{1}{8}$	$3\frac{1}{8}$	1
grand total					$12\frac{5}{8}$					$17\frac{5}{8}$
# of Plants				106.						95
gts per				.117						.181
" " wire				2541.82						4029.3
crates "				108.0						167.8
Percent of grade 1				1.0						5.6
" " " 2				5.0						15.6
" " " 3				64.0						51.7
" " " 4				25.0						21.2
" " " 5				11.0						5.6

Table V Con.

35

Variety	Grade	#5 Warfield					#6 Bismark				
		1	2	3	4	5	1	2	3	4	5
May	25			4	8						
"	27			$\frac{3}{4}$ g	$\frac{1}{8}$ g						
"	29			$\frac{1}{2}$ g	$\frac{1}{8}$ g				2		
"	31			$\frac{3}{4}$ g	10				2		
June	2			$3\frac{1}{2}$ g	$\frac{3}{4}$ g	20			3 g	$\frac{1}{8}$ g	
"	5			$\frac{1}{8}$ g	$\frac{1}{2}$ g	6			$3\frac{1}{8}$ g	3	
"	7			$\frac{1}{8}$ g	$\frac{3}{4}$ g	$\frac{1}{8}$ g			$2\frac{1}{8}$ g	$\frac{1}{8}$ g	10
"	9			$\frac{1}{8}$ g	1				2 g	$\frac{5}{8}$ g	$\frac{1}{8}$ g
"	12			$\frac{1}{2}$ g	$\frac{1}{2}$ g	10			$2\frac{3}{4}$ g	$3\frac{1}{8}$ g	$\frac{1}{8}$ g
"	14			10	$\frac{1}{2}$ g				$\frac{5}{8}$ g	$\frac{5}{8}$ g	$\frac{1}{2}$ g
"	16				$\frac{1}{4}$ g	3			$\frac{1}{4}$ g	$\frac{1}{4}$ g	10
"	19				2	5				6	3
totals ^{p22}				9	$6\frac{7}{8}$	$\frac{7}{8}$			14	$\frac{1}{5}$	$\frac{6}{7}$
grand total						$15\frac{7}{8}$					$19\frac{7}{8}$
# of Plants						144					135
gts per "						.110					.147
" " wire						2395.8					3201.66
crates "						89.8					133.4
Percent of grade 1						0.0					0.0
"	"	"	2			0.0					3.2
"	"	"	3			56.6					62.8
"	"	"	4			40.9					31.8
"	"	"	5			2.3					1.7

Table V con.

36

Variety		#7 Wolverton					#8 Parson's Beauty				
Grade		1	2	3	4	5	1	2	3	4	5
May 29			2						6		
" 31			6								
June 2				2 $\frac{1}{4}$ g	$\frac{1}{10}$ g		2	1 $\frac{3}{4}$ g	^b 10		
" 5				4 g	1 g	1		1 $\frac{1}{2}$ g	$\frac{3}{8}$ g		2
" 7				$\frac{3}{4}$ g	$\frac{1}{2}$ g	3		1 $\frac{1}{4}$ g	$\frac{5}{8}$ g		2
" 9				$\frac{3}{4}$ g	$\frac{5}{8}$ g	10		2 g	$\frac{7}{8}$ g		10
" 12				1 g	2 g			2 g	2 $\frac{1}{2}$ g		2
" 14				1	$\frac{1}{4}$ g	$\frac{1}{4}$ g		$\frac{3}{4}$ g	$\frac{3}{4}$ g		2
" 16						6		$\frac{5}{8}$ g	$\frac{7}{8}$ g		
" 17					2			6	2		8
" 22								3	10		^b 12
" 24								3			
totals			$\frac{7}{8}$	8 $\frac{7}{8}$	4 $\frac{7}{8}$	$\frac{7}{8}$		11	6 $\frac{1}{8}$	$\frac{7}{8}$	
grand total						14 $\frac{1}{8}$					17 $\frac{7}{8}$
# of Plants						181					156
gts per "						.078					.112
" " acre						1648.81					2439.36
crates "						70.7					101.6
Per cent of grade 1						0.0					0.0
" " 2						3.2					.7
" " 3						62.8					62.8
" " 4						31.8					35.0
" " 5						1.7					1.4

Table 7. Con.

Variety		#9 Klonlike					#10 Marshall				
		1	2	3	4	5	1	2	3	4	5
Gracie									3		
May 31											
June 2								2	$1\frac{1}{4}$ g	4	
" 5				$\frac{1}{8}$ g	1	8^2	1	1	$2\frac{1}{2}$ g	15	1
" 7									$\frac{5}{8}$ g	15	3
" 9		1	$\frac{7}{8}$ g			3			$\frac{5}{8}$ g	$\frac{1}{8}$ g	5 ²
" 12			$2\frac{3}{4}$ g	$\frac{3}{4}$ g	10^2			1	8	$\frac{5}{8}$ g	10^2
" 14			$1\frac{5}{8}$ g	$\frac{1}{4}$ g	2 ²			3		$\frac{5}{8}$ g	
" 16			$1\frac{5}{8}$ g	$\frac{1}{2}$ g	$\frac{1}{4}$ g			10		$\frac{1}{2}$ g	$\frac{1}{8}$ g
" 19			1 g	$\frac{1}{2}$ g	$\frac{1}{8}$ g ²			4		10	15
" 22			$\frac{1}{2}$ g	$\frac{1}{8}$ g	10					2	3
" 24			10	$\frac{1}{2}$ g	30						
" 27			3	40	6						
totals		$\frac{1}{8}$	$8\frac{7}{8}$	$2\frac{1}{8}$	$\frac{3}{8}$		$\frac{1}{8}$	$6\frac{3}{8}$	$2\frac{7}{8}$	$\frac{7}{8}$	
grand total						$11\frac{5}{8}$					9
# of Plants						85					146
gts per "						.136					.061
" " are						296218					1328.56
crates "						123.4					55.3
Percent of grade 1						0.0					0.0
" " " 2						.05					1.3
" " " 3						73.1					70.8
" " " 4						23.6					25.0
" " " 5						3.2					2.6

Table V con.

Variety	#11 Glen Mary					#12 Monitor				
Grade	1	2	3	4	5	1	2	3	4	5
May 27							4	$\frac{1}{4}g$		
" 31			1					5		
June 2			$\frac{1}{8}g$	6		1g	$4\frac{1}{2}g$	$\frac{1}{4}g$		
" 5		1	$\frac{3}{4}g$	4		6	$5\frac{1}{2}g$	5	2	
" 7	1	2	3g	8	10	2	$4\frac{1}{4}g$	$1\frac{3}{4}g$	$\frac{3}{4}g$	
" 9		1	$6\frac{3}{4}g$	$\frac{7}{8}g$	$\frac{3}{8}g$		$5\frac{3}{4}g$	1g	$\frac{7}{8}g$	
" 12		2	$\frac{1}{2}g$	$\frac{1}{2}g$	10		$2\frac{3}{4}g$	$\frac{5}{8}g$	$\frac{5}{8}g$	
" 14			$4\frac{7}{8}g$	$1\frac{1}{2}g$	$\frac{5}{8}g$		2g	2g	$\frac{1}{2}g$	
" 16			$1\frac{1}{8}g$	$\frac{7}{8}g$	$\frac{1}{4}g$		$\frac{1}{8}g$	$\frac{3}{4}g$	$\frac{1}{2}g$	
" 19			1g	$\frac{1}{2}g$	$\frac{1}{8}g$		$\frac{1}{8}g$	$\frac{1}{4}g$	20	
" 22			$1\frac{1}{8}g$	$\frac{1}{4}g$	$\frac{1}{8}g$			30	20	
" 24			3	20	10					
" 27			4	20	0					
totals	$\frac{1}{8}$	$\frac{3}{8}$	$19\frac{1}{8}$	$4\frac{3}{8}$	$1\frac{5}{8}$	$1\frac{5}{8}$	$25\frac{5}{8}$	$5\frac{6}{8}$	$3\frac{7}{8}$	
grand total					$25\frac{7}{8}$				$36\frac{7}{8}$	
# of Plants				156					122	
qts per "				.163					.289	
" " acre				3556.14					5612.22	
crates "				147.9					271.3	
Percent of grade 1				.5					0.0	
" " " 2				1.4					4.4	
" " " 3				74.5					70.2	
" " " 4				17.1					16.7	
" " " 5				6.3					9.5	

Table V con.

39

Variety	#13	Aroma					#14	Enormous				
Grade	1	2	3	4	5		1	2	3	4	5	
May 27									3	1		
" 29									$\frac{1}{8}$ g	2		
" 31									$\frac{1}{4}$ g	2		
June 2			2						2 g	$\frac{1}{4}$ g		
" 5		3	13						$3\frac{1}{2}$ g	$\frac{1}{2}$ g		
" 7			$\frac{7}{8}$ g	6					3 g	$\frac{1}{2}$ g	$\frac{1}{2}$ g	
" 9			$\frac{1}{8}$ g	7	1	2			2 g	$\frac{1}{8}$ g	$\frac{1}{4}$ g	2
" 12			$1\frac{1}{2}$ g	4	5	2			2 g	$\frac{1}{8}$ g	10	
" 14			$2\frac{3}{4}$ g	$\frac{1}{4}$ g	$\frac{1}{2}$ g				1 g	$2\frac{1}{2}$ g	$\frac{1}{2}$ g	2
" 16			$\frac{1}{2}$ g	10	13				10	$\frac{1}{8}$ g	10	
" 19			14	14					1 g	$\frac{1}{2}$ g	$\frac{1}{2}$ g	
" 22			10	6						10	$\frac{1}{8}$ g	
totals		$\frac{7}{8}$	$7\frac{7}{8}$	$\frac{7}{8}$	$\frac{5}{8}$				$14\frac{7}{8}$	$8\frac{7}{8}$	2	
grand total					$8\frac{7}{8}$						$25\frac{5}{8}$	
# of Plants					161						145	
gts per "					.655						.176	
" " acre					1197.9						3833.28	
crates "					47.9						159.0	
Percent of grade 1					0.0						0.0	
" " " 2					2.8						0.0	
" " " 3					84.5						58.0	
" " " 4					5.6						34.1	
" " " 5					7.0						7.8	

Table V con.

40

Variety #15		Haverland					#16		Splendid				
Grade		1	2	3	4	5	1	2	3	4	5		
May	29			$\frac{7}{8}$ g	2				2				
"	31			$1\frac{1}{8}$ g	4				5				
June	2			$2\frac{1}{2}$ g	$\frac{1}{2}$ g	11			$2\frac{1}{2}$ g	10			
"	5			2 g	$\frac{3}{4}$ g	14		1	4 g	$\frac{1}{8}$ g			
"	7			4 g	1 g	10			$2\frac{1}{8}$ g	$\frac{3}{8}$ g	10		
"	9			1 g	$\frac{3}{4}$ g	7			1 g	$\frac{1}{8}$ g	2		
"	12			$1\frac{1}{2}$ g	2 g	10			$\frac{3}{4}$ g	$\frac{3}{4}$ g	$\frac{1}{2}$ g		
"	16			2 g	1 g	$\frac{9}{8}$ g			$\frac{1}{8}$ g	1 g	$\frac{1}{4}$ g		
"	19			$\frac{9}{8}$ g	$\frac{7}{8}$ g	10			10	$\frac{1}{4}$ g	10		
"	22			20	$\frac{1}{4}$ g	$\frac{3}{4}$ g			4	$\frac{1}{8}$ g	$\frac{1}{4}$ g		
"	24			10	15				3	3	10		
"	27								3	5			
totals				$15\frac{1}{8}$	$7\frac{7}{8}$	$1\frac{7}{8}$		very	$10\frac{1}{8}$	$3\frac{7}{8}$	$1\frac{7}{8}$		
grand total						$25\frac{1}{8}$					$15\frac{7}{8}$		
# of Plants						100					71		
gts per "						.251					.218		
" " acre						5466.78					4748.04		
crates "						127.5					197.8		
Percent of grade 1						0.0					0.0		
" " " 2						0.0					0.0		
" " " 3						62.1					69.3		
" " " 4						29.8					22.6		
" " " 5						7.4					8.4		



Table V Con.

41

Variety #17 Johnson						#18 New York				
Grade	1	2	3	4	5	1	2	3	4	5
May 29			5	1						
" 31			$\frac{3}{4}g$	2						
June 2			4	$\frac{1}{4}g$			3			
" 5			$\frac{4}{4}g$	$\frac{1}{4}g$	7 ²		12	3		
" 7		1	$\frac{2}{4}g$	$\frac{1}{4}g$	3 ²	1 ⁰	$\frac{2}{4}g$	15	7 ²	
" 9			$\frac{1}{4}g$	$\frac{3}{4}g$	20		$\frac{1}{8}g$	$\frac{1}{2}g$	4 ²	
" 12			$\frac{1}{4}g$	10	$\frac{1}{2}g$		$\frac{3}{4}g$	$\frac{3}{4}g$	$\frac{1}{2}g$	
" 16			10	$\frac{3}{4}g$	6		$\frac{1}{2}g$	$\frac{1}{2}g$	10 ²	
" 17			4	$\frac{1}{8}g$	5 ²		10	$\frac{4}{8}g$	5 ²	
" 22				4	10		10	30	$\frac{3}{4}g$	
" 24							1	6		
totals			$14\frac{7}{8}$	$7\frac{7}{8}$	$\frac{7}{8}$	May	$5\frac{7}{8}$	$2\frac{3}{8}$	$1\frac{3}{8}$	
grand total				23					$9\frac{7}{8}$	
# of Plants				142					149	
gts per "				161					.062	
" " acre				3506.58					1350.3	
Crates " "				146.1					56.2	
Percent of grade 1				0.0					0.0	
" " " 2				0.0					0.0	
" " " 3				64.0					57.4	
" " " 4				31.4					25.6	
" " " 5				3.8					14.8	

Table V Con.

42

Variety		#17 Family					#20 Brandywine				
Grade		1	2	3	4	5	1	2	3	4	5
June	2								3		
"	4							2 ^b	1 ³ / ₄ g	15	2
"	5							4	3 ¹ / ₄ g	11	4
"	7			4					2 g	10	2
"	9			4				2	5 ¹ / ₂ g	3 ¹ / ₄ g	1 ¹ / ₈ g
"	12			3 ¹ / ₄ g	2				2 ¹ / ₄ g	1 ¹ / ₂ g	1 ¹ / ₈ g
"	14			2 g	1 ¹ / ₄ g	10 ²			2 ¹ / ₂ g	1 ¹ / ₈ g	1 ¹ / ₂ g
"	16			1 ³ / ₈ g	7 ¹ / ₈ g	1 ¹ / ₂ g			1 g	3 ¹ / ₄ g	1 ¹ / ₂ g
"	19			10	15				10	17	10
"	22			10	15	10			20	1 ¹ / ₈ g	3
"	24			8	30	4			2	20	
"	27				20						
totals				4 ¹ / ₈	1 ⁵ / ₈	5 ¹ / ₈		1 ¹ / ₂	19	4	1 ³ / ₈
grand total						6 ⁶ / ₈					24 ⁷ / ₈
# of Plants						157					133
gts per "						.043					.186
" " acre						936.54					4051.48
crates "						39.0					168.7
Per cent of grade 1						0.0					0.0
" " 2						0.0					2.0
" " 3						66.6					76.3
" " 4						24.0					16.0
" " 5						7.0					5.0

Table V con.

43

Variety #21 Brandywine ^{mich.}		#22 Cumberland				
Grade	1	2	3	4	5	1 2 3 4 5
June 2			1 ^u			
" 5			1 ^u 1 ^u ₈	1 ^u	2	
" 7		1	1 ^u ₈	1	3	
" 9			2 ₈	⁹ / ₈		
" 12			5 ₈	1 ^u ₈	¹ / ₂ ₈ ²	
" 14			1 ^u ₄ ₈	⁵ / ₈	10 ₈ ²	
" 16			³ / ₄ ₈	1 ^u ₈	⁴ / ₈ ₈ ²	
" 19			¹ / ₂ ₈	¹ / ₂ ₈	¹ / ₈ ₈	
" 22			10	20	30	
" 24			10	¹ / ₈ ₈	10	
" 27			2	8		
totals		1 very	14 ¹ / ₈	6 ² / ₈	1 ¹ / ₈	
grand total					22 ⁷ / ₈	
# of Plants				165		
gts per				1.36		
" " acre				2962.08		
Crates "				123.4		
Percent of grade 1				0.0		
" " " 2				0.0		
" " " 3				62.7		
" " " 4				29.4		
" " " 5				7.7		

Table V Corn.

44

Variety	#23	Rough Rider					#24	Clyde				
Grade	1	2	3	4	5		1	2	3	4	5	
May 29									$\frac{1}{8}$ g	1		
" 31									$\frac{3}{4}$ g	4		
June 2									5 g	$\frac{3}{4}$ g	$\frac{3}{4}$ g ²	
" 5									$\frac{1}{8}$ g	7	$\frac{1}{8}$ g	
" 7									$\frac{2}{8}$ g	$\frac{3}{4}$ g		
" 9			10	2					1 g	$\frac{1}{2}$ g		
" 12			$\frac{1}{2}$ g	$\frac{1}{4}$ g					1 g	1 g	$\frac{1}{8}$ g ²	
" 14			$\frac{2}{4}$ g	$\frac{1}{8}$ g	10 ²				10	$\frac{1}{2}$ g	3	
" 16			$\frac{1}{4}$ g	$\frac{1}{4}$ g	$\frac{1}{8}$ g							
" 17			$\frac{1}{2}$ g	$\frac{1}{4}$ g	$\frac{1}{2}$ g							
" 22			10	15	20							
" 24			10	$\frac{1}{2}$ g	10							
totals			$5\frac{7}{8}$	$4\frac{1}{8}$	$\frac{6}{8}$				10	$3\frac{3}{8}$	$1\frac{1}{8}$	
grand total					$11\frac{7}{8}$						$14\frac{6}{8}$	
# of Plants					138						187	
yts per "					.081						.074	
or " wire					1764.18						1698.84	
crates " "					73.4						70.7	
Percent of grade 1					0.0						0.0	
" " 2					0.0						0.0	
" " 3					50.0						67.7	
" " 4					43.3						24.5	
" " 5					6.6						7.6	

Table V, con.

45

Variety	#25	Parker	Earle	#26	Sample
Grade	1	2	3	4	5
May 27					8
" 31					2
June 2		2			7
" 5		$\frac{3}{4}$ g	$\frac{1}{16}$ g		$2\frac{1}{8}$ g $\frac{1}{8}$ g
" 7		$2\frac{1}{8}$ g	$\frac{1}{2}$ g	5	2 g 9
" 9		10	$\frac{1}{8}$ g		$1\frac{3}{4}$ g $\frac{3}{8}$ g
" 12		$3\frac{1}{2}$ g	1 g	$\frac{1}{8}$ g	$\frac{1}{8}$ g $\frac{5}{8}$ g
" 14		$1\frac{1}{8}$ g	3 g	$\frac{1}{2}$ g	$\frac{1}{2}$ g $\frac{1}{2}$ g
" 16		$\frac{5}{8}$ g	$\frac{3}{4}$ g		$\frac{1}{2}$ g $\frac{1}{4}$ g
" 19		14	$\frac{3}{4}$ g	$\frac{3}{4}$ g	10
" 22		8	30		
" 24		2	20	6	
totals		$8\frac{7}{8}$	$6\frac{3}{8}$	$1\frac{7}{8}$	6 2 $\frac{7}{8}$
grand total				$16\frac{3}{8}$	$8\frac{7}{8}$
# of Plants				97	88
gts per "				.168	.086
" " acre				3657.04	1873.08
crates "				152.4	78.
Percent of grade 1				0.0	0.0
" " " 2				0.0	0.0
" " " 3				52.6	70.6
" " " 4				38.1	23.5
" " " 5				9.1	6.8

Table V con.

46

Variety	Grade	#27 Crescent					#28 Lovett				
		1	2	3	4	5	1	2	3	4	5
May	29			$\frac{1}{8}$ g	2				4		
"	31			$\frac{3}{4}$ g	10				7	3	
June	2			$2\frac{1}{2}$ g	$\frac{3}{4}$ g	6			$1\frac{3}{4}$ g	$\frac{1}{16}$ g	
"	5			$4\frac{1}{4}$ g	$2\frac{1}{2}$ g	$\frac{9}{8}$ g			$2\frac{1}{4}$ g	$\frac{5}{8}$ g	6
"	7			$1\frac{1}{16}$ g	$1\frac{5}{8}$ g	$\frac{1}{8}$ g		5	$1\frac{1}{4}$ g	$\frac{7}{8}$ g	$\frac{1}{8}$ g
"	9			$\frac{5}{8}$ g	$1\frac{1}{2}$ g	$\frac{1}{8}$ g		3	1 g	20	10
"	12			$\frac{3}{4}$ g	$2\frac{5}{8}$ g				$1\frac{3}{4}$ g	1 g	$10\frac{2}{2}$
"	14			10	2 g	1 g			$\frac{3}{4}$ g	3 g	$\frac{5}{8}$ g
"	16			1	$\frac{5}{8}$ g	$\frac{1}{4}$ g					
"	19					$\frac{1}{16}$ g				15	20
"	22				2	5				7	10
"	24									6	10
totals				$9\frac{1}{8}$	$11\frac{1}{8}$	$2\frac{3}{8}$		$\frac{1}{2}$	$8\frac{7}{8}$	$5\frac{5}{8}$	$1\frac{1}{8}$
grand total						$23\frac{7}{8}$					$16\frac{1}{8}$
# of Plants						127					138
gts per "						.188					.116
" " acre						4094.64					2526.48
rates " "						170.					105.2
Percent of grade 1						0.0					0.0
" " " 2						0.0					3.1
" " " 3						41.3					55.0
" " " 4						48.6					34.8
" " " 5						9.9					6.9

Table V Corn.

47

Variety #29 Parker Earle						#30 Long Leather				
Grade	1	2	3	4	5	1	2	3	4	5
May 25								13	11	
" 27								$\frac{3}{4}$ g	$\frac{1}{8}$ g	
" 29								$2\frac{1}{2}$ g	$\frac{7}{8}$ g	6
" 31			1	1				2 g	$\frac{3}{4}$ g	
June 2			8	3				$2\frac{3}{4}$ g	$\frac{3}{4}$ g	$\frac{1}{2}$ g
" 5			1 g	10	5			$\frac{1}{8}$ g	$2\frac{1}{8}$ g	1 g
" 7								$\frac{9}{8}$ g	2 g	$\frac{1}{2}$ g
" 9			$\frac{3}{4}$ g	$\frac{7}{8}$ g				7	$\frac{1}{2}$ g	
" 12			$\frac{5}{8}$ g	$\frac{1}{4}$ g	$3\frac{2}{2}$			$\frac{1}{2}$ g	$\frac{5}{8}$ g	$\frac{1}{4}$ g
" 14			$\frac{1}{2}$ g	$\frac{5}{8}$ g	$\frac{1}{8}$ g			5	$\frac{1}{2}$ g	2
" 16			5	$\frac{1}{2}$ g				2	15	15
" 19			4	$\frac{10}{3}$ g	7					16
total			3	$1\frac{1}{8}$	$\frac{7}{8}$			$9\frac{7}{8}$	$11\frac{7}{8}$	$2\frac{3}{8}$
grand total					$4\frac{7}{8}$					$23\frac{1}{8}$
# of Plants					62					131
gts per "					.072					.168
" " acre					1568.16					3654.04
Crates "					65.3					152.4
Percent of grade 1					0.0					0.0
" " " 2					0.0					0.0
" " " 3					66.6					41.8
" " " 4					27.6					48.6
" " " 5					5.5					9.9

Table V Con.

48

Variety		#31 Seaford					#32 Palmer				
Grade		1	2	3	4	5	1	2	3	4	5
May	27								1	6	
"	29			11					15	19	
"	31			7	2				$\frac{1}{8}$ g	$\frac{1}{8}$ g	
June	2			$2\frac{3}{8}$ g	$\frac{1}{8}$ g				$\frac{1}{2}$ g	$\frac{7}{8}$ g	$\frac{1}{2}$ g
"	5		2	$2\frac{3}{8}$ g	5	$\frac{1}{8}$ g			$\frac{1}{2}$ g	$\frac{7}{8}$ g	$\frac{1}{8}$ g
"	7		1	4 g	$\frac{1}{2}$ g	$\frac{1}{2}$ g				$\frac{1}{2}$ g	$\frac{7}{8}$ g
"	7	1		$1\frac{1}{2}$ g	$\frac{1}{4}$ g				1	$\frac{1}{8}$ g	
"	12		1	$1\frac{1}{8}$ g	$1\frac{1}{8}$ g	$\frac{1}{8}$ g			$\frac{1}{4}$ g	$\frac{1}{2}$ g	$\frac{1}{2}$ g
"	14			3	1 g	$\frac{1}{8}$ g				10	5
"	16				20	40				8	10 ²
"	19				3	8					
"	22				5						
Totals		very	$\frac{7}{8}$	$13\frac{1}{8}$	$3\frac{1}{8}$	1			$1\frac{7}{8}$	$3\frac{7}{8}$	$2\frac{7}{8}$
grand total						$17\frac{7}{8}$				$7\frac{7}{8}$	
# of Plants						128				135	
gts per "						.132				.066	
" " acre						2885.76				1219.68	
crates " "						120.2				50.8	
Percent of grade 1						6.0				0.0	
" " " 2						1.3				0.0	
" " " 3						75.5				17.6	
" " " 4						17.4				42.6	
" " " 5						5.5				37.7	

Table V Corn.

49

Variety #33 Ridgeway	1	2	3	4	5
Grade					
May 31					
June 2					
" 5		1	2 ³ / ₄ g		3 ² / ₂
" 7			5 ⁸ / ₈	15	10
" 9			2 ⁸ / ₈ g	5 ⁸ / ₈ g	1 ² / ₂
" 12			2 ⁸ / ₈ g	1 ¹ / ₂ g	1 ¹ / ₂ g
" 14		1	3 ¹ / ₄ g	4	5 ⁸ / ₈ g
" 16			1 ¹ / ₄ g	1 ¹ / ₂ g	1 ¹ / ₂ g
" 19			1 ⁸ / ₈ g	3 ¹ / ₄ g	1 ⁸ / ₈ g
" 22			20	3 ¹ / ₄ g	1 ⁸ / ₈ g
" 24				15	3

Variety #34 Kansas	1	2	3	4	5
Grade					
May 31			2		
June 2		1	1 ⁸ / ₈ g	10	
" 5			5 ⁸ / ₈ g	5 ⁸ / ₈ g	8
" 7		2	5 ¹ / ₄ g	3 ⁸ / ₈	1 ¹ / ₄ g
" 9			1 ⁸ / ₈ g	2	
" 12			1 ⁸ / ₈ g	3 ¹ / ₄ g	1 ¹ / ₄ g
" 14			3 ¹ / ₄ g	2 ¹ / ₄ g	1 ⁸ / ₈ g
" 16			5	3 ¹ / ₄ g	1 ⁸ / ₈ g
" 19				2	1 ⁸ / ₈ g
" 22				5	16

totals $\frac{1}{8}$ 16 7 2

$\frac{1}{8}$ 2 ³/₈ 4 ³/₈ 1 ¹/₈

grand total 27 ¹/₈

8 ⁷/₈

of Plants 95

130.

gts per " 280

1063

" " acre 6207.3

1372.14

crates " " 258.3

57.1

Percent of grade 1 0.0

0.0

" " " 2 .4

1.5

" " " 3 59.1

27.2

" " " 4 33.1

56.0

" " " 5 7.3

10.0

Table V Con.

51

Variety		#37 Cedarwood					#38 Worman				
Grade		1	2	3	4	5	1	2	3	4	5
May	27			5							
"	29			2 1/4 g	1/2 g	5					
"	31			1 1/8 g	1/10 g						
June	2			4 1/4 g	1 1/8 g	1/2 g					
"	5			3 1/4 g	2 1/2 g	1 g	6	1/2 g	g		
"	7			3 1/2 g	3 3/8 g	3/4 g	6	g	1/8 g		7 1/2
"	9			1/2 g	2 g	10 1/2	1	2 g	5/8 g	g	1/4 g
"	12			1 g	3/4 g	1/4 g		2 g	1 3/8 g		10 1/2
"	14			1/8 g	2 g	1/8 g		1 1/4 g	1 3/4 g		1/2 g
"	16			6	5/8 g	6		1/8 g	1/2 g		10 1/2
"	17				1/16 g	1/2 g					
"	22										
totals				16 7/8	13 3/8	3 3/8	6 1/8	8 7/8	4 5/8	1	
grand total						33 7/8					15 1/8
# of Plants						142					178
gts per "						.234					.085
" " acre						5096.52					1851.3
crates " "						212.3					77.1
Percent of grade 1						0.0					0.0
" " " 2						0.0					4.9
" " " 3						49.6					58.1
" " " 4						40.2					30.3
" " " 5						10.1					6.5

Table V Con.

52

Variety	#39 Senator	Dunlap	#40 Hero							
Grade	1	2	3	4	5	1	2	3	4	5
May 25			3	1						
" 27			$\frac{3}{4}$ 8		1					
" 29			3 8	8				$1\frac{1}{8}$ 8	2	8 ²
" 31			$2\frac{3}{4}$ 8	$\frac{1}{8}$ 8				1 8	3	
June 2			$5\frac{1}{2}$ 8	$\frac{1}{2}$ 8	8			$2\frac{1}{8}$ 8	15	
" 5			$8\frac{3}{4}$ 8	$1\frac{1}{8}$ 8	$\frac{1}{2}$ 8			$2\frac{3}{8}$ 8	$\frac{3}{8}$ 8	8
" 7			$1\frac{3}{4}$ 8	$1\frac{1}{4}$ 8	$\frac{1}{2}$ 8			$1\frac{1}{8}$ 8	$\frac{1}{2}$ 8	4 ²
" 9			$\frac{1}{2}$ 8	$\frac{3}{4}$ 8				11	$\frac{5}{8}$ 8	3 ²
" 12			$\frac{1}{2}$ 8	$1\frac{5}{8}$ 8	$\frac{1}{8}$ 8			$\frac{5}{8}$ 8	$\frac{1}{2}$ 8	10 ²
" 14			$\frac{3}{4}$ 8	$\frac{3}{4}$ 8	$\frac{1}{2}$ 8			$\frac{1}{4}$ 8	$\frac{1}{4}$ 8	10 ²
" 16				16	5 8			3	10	5
" 19			3	10	10					
totals			$25\frac{3}{8}$	$5\frac{7}{8}$	$1\frac{7}{8}$			$9\frac{7}{8}$	$2\frac{3}{8}$	$\frac{3}{8}$
grand total					$32\frac{5}{8}$					12
# of Plants					188					179
gts per Plant					.120					.067
" " acre					261.36					1459.26
crater " "					208.8					56.8
Percent of grade 1					0.0					0.0
" " " 2					0.0					0.0
" " " 3					77.7					77.0
" " " 4					16.4					19.8
" " " 5					5.7					3.1

Table V Con.

53

Variety	#41 Lady Thompson					#42 Excelsior				
	1	2	3	4	5	1	2	3	4	5
May	21							15	20	3
	23							68	47	5
	25							$\frac{1}{2}$	$8\frac{3}{4}$	1
	27							$\frac{1}{2}$	$6\frac{3}{4}$	14
	29							$1\frac{1}{8}$	$8\frac{1}{4}$	$\frac{1}{16}$
	31		3					$\frac{1}{8}$	$8\frac{7}{8}$	18
June	2		$1\frac{1}{2}$					$\frac{3}{8}$	1	$\frac{1}{2}$
	5		$2\frac{7}{8}$	$\frac{1}{2}$	10			$\frac{3}{8}$	$8\frac{1}{8}$	$\frac{9}{8}$
	7		2	$\frac{5}{8}$	10			1		
	9		$\frac{5}{8}$	$\frac{5}{8}$	5			3	$\frac{1}{2}$	10
	12		$\frac{5}{8}$	$\frac{1}{4}$	5			2	$\frac{1}{4}$	10
	14		10	1	$\frac{1}{4}$				1	20
	$\frac{1}{16}$		$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{2}$					
totals			$3\frac{1}{8}$	$7\frac{1}{8}$	$1\frac{7}{8}$			$7\frac{1}{8}$	$3\frac{1}{8}$	$\frac{5}{8}$
grand total					$12\frac{1}{8}$					$11\frac{7}{8}$
# of Plants					142					133
gts per "					.085					.086
" " acre					1841.3					1875.08
crates " "					76.7					78.0
Percent of grade 1					0.0					0.0
" " " 2					0.0					0.0
" " " 3					30.9					67.3
" " " 4					58.7					27.1
" " " 5					16.3					5.4

Table V Con.

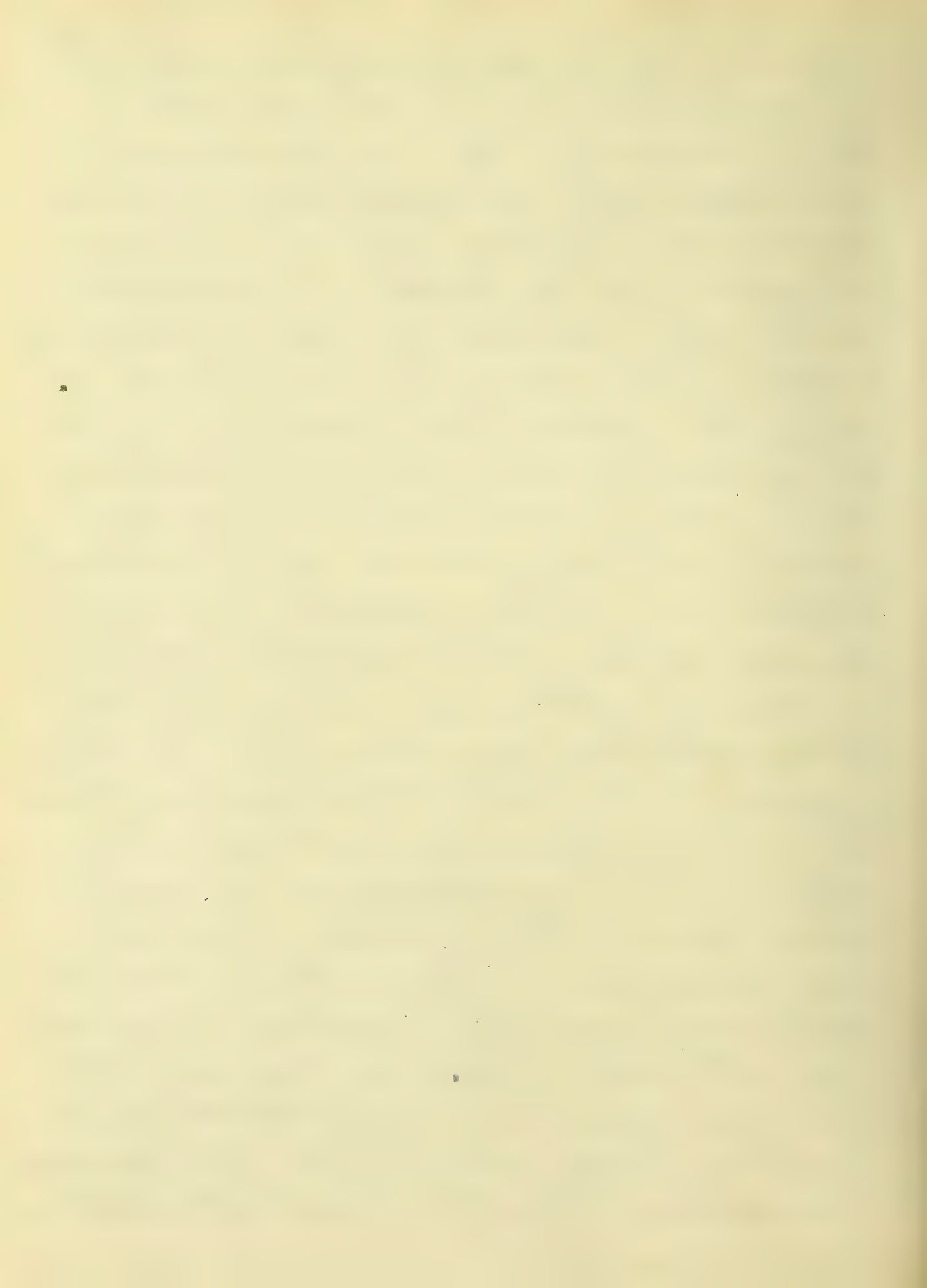
Variety		#43 Maximus					#44 Tennessee.				
Grade		1	2	3	4	5	1	2	3	4	5
May 31				1	12						
June 2				1	1				$\frac{3}{4}g$	15	
" 5				8	1		2		2g	$\frac{1}{2}g$	10
" 7				1	6					6	
" 9					$\frac{1}{8}g$				1g	1g	$\frac{1}{4}g$
" 12									2g	$2\frac{1}{4}g$	$\frac{1}{2}g$
" 14					1	1			$\frac{5}{8}g$	1g	$\frac{3}{4}g$
" 16									15	$\frac{1}{8}g$	4
totals				$\frac{1}{8}$	$\frac{3}{8}$	$\frac{1}{6}$	$\frac{1}{8}$	$16\frac{4}{8}$	$4\frac{7}{8}$	$1\frac{5}{8}$	
grand total						$\frac{7}{8}$				$13\frac{4}{8}$	
# of Plants						8				178	
gts per "						.062				.073	
" " acre						1350.36				1589.94	
water " "						56.2				66.2	
Percent of grade 1						0.0				0.0	
" " " 2						0.0				.9	
" " " 3						25.0				50.0	
" " " 4						50.0				37.1	
" " " 5						25.0				12.14	

55

Table V shows that some varieties must be discarded because they do not produce a large enough quantity of fruit to meet the cost of production. Other varieties must be eliminated because, out of the grand total production, the saleable portion is too small to render them profitable. Once having the data as given in table V it is only a mathematical task to determine which varieties produce the large crops of large berries. Such data is summarized in table ~~XXIII~~ on page 128. It would be unwise to attempt to draw final conclusions from table V alone, because quantity and size of fruit are but ~~two~~ of the ~~many~~ factors to be considered in selecting a variety of strawberries. Color, flavor, shape and keeping qualities of the berry, character of foliage and season of ripening are vital factors that must not be over-

56
looked if a successful choice
of varieties is to be made.

The plan of the experiment
forbids that final conclusions
be drawn from any one table
because each table represents
but one phase of the question,
and before any variety can be
placed upon the chosen list
it must receive a recom^mendat-
ion from each table represent-
ing a certain phase of the invest-
igation. The process adopted
in executing this investigation
is one of elimination. First;
the varieties are arranged in order
relative to their total yield. Then
they are rearranged according
to the relative amount of sale-
able fruit they yield, size only
considered. Then those varieties
deficient in color or any other vital
point are eliminated until
the process is completed, thus
leaving those varieties possessing
the most valuable characteristics.



Color of Berry.

57

Color is an efficient salesman for any fruit. In fact a berry slightly under size and of poor flavor if it has a high color will in a majority of cases be a ready seller. Couple size and color together and nine of every ten average house-keepers will ^{take} it in preference to good flavor and poor color. A deep red ^{berry} that sometimes shades almost into a black as is the case with the Marshall, will sell to the most select trade. A bright glossy red has many admirers but it yields to the deep dark red when in sharp competition. There are some reds which shade toward a crimson but such a color has only a limited circle of friends. The light red and especially that light red which is almost white is a serious defect in any variety.

Two magnificent yielders,⁵⁸
the Bederwood and the Monitor,
suffer on account of their poor
complexion.

Table VI gives data upon
the color of the various varieties.
Color is a hard topic upon
which to obtain exact and satis-
factory data, because the variation
is discontinuous. There are no
distinct divisions or gaps be-
tween the desirable and the un-
desirable, because of the inper-
ceptible gradation from the
one to the other. Consequently
the dividing line must be set
arbitrarily. This arbitrary stand-
ard is ~~as~~ unsatisfactory because
of the unstable whims of the
market, yet within certain limits
the demands of the market can
be approximated. Upon such a
basis ~~these~~ standards of this ex-
periment are based.

Table VI Color of Berry.⁵⁹

Variety Number	Name of Variety	Color of Berry.
1	Bubach	Bright
2	Nick Chmer	Bright
3	Miller	Bright
4	W ^m Belt	Bright, - glossy
5	Warfield	Bright
6	Bismark	Light yellowish red
7	Wolverton	Light
8	Parson's Beauty	Light
9	Klondike	Light
10	Marshall	Dark, <u>very</u>
11	Elen Mary	Dark
12	Monitor	Light
13	Aroma	Bright, - glossy
14	Enormous	Bright
15	Haverland	Bright
16	Splendid	Dark -
17	Johnson Early	Light
18	New York	Bright - dark
19	Gandy	Bright
20	Brandywine	Dark
21	Brandywine Mich	Dark
22	Cumberland	Light, - poor.



Table VI Con. Color of Berry. 60

Variety number	Name of Variety	Color of Berry.
23	Rough Rider	Bright, glossy
24	Calypso	creamy white to crimson
25	Parker Earle Imp.	Bright
26	Samuel	Dark
27	Crescent	Bright
28	Lovett	Dark
29	Parker Earle	Bright
30	Aug Luther	medium bright
31	Shepard	Dark, very
32	Palmer	Dark
33	Ridgeway	Bright
34	Kansas	Dark
35	Michels Early	Dark
36	Up-to-Hatch	Bright
37	Bennetwood	Light, poor
38	Dorman	deep scarlet
39	Senator Hunlap	Dark
40	Hero	Bright
41	Lady Thompson	^{Bright} very deep dark red
42	Excelsior	Bright
43	Maximus	Bright
44	Temerlee Prolific	Light

Flavor of Berry.

61

The flavor of a berry, that is, its degree of acidity or sweetness, is a matter of importance, but the range of the market's demand is so wide that a large majority of varieties pass without discrimination. The principal thing to be avoided is a lack of flavor. The ideal, and the berry which suits the tastes of the greatest number of berry eaters, is that mild yet elegant richness so well exemplified in the Marshall. Data on the flavor of the various varieties is given in table VII.

62

Table VII Flavor of Berry

Variety number	Name of variety	Flavor of Berry. acid, mild or sweet.
1	Bubach	Mild
2	Nick Ahmer	Sweet
3	Miller	Sweet
4	W ^m Belt	Sweet, good
5	Warfield	acid
6	Bismark	Mild-sweet
7	Wolverton	Slightly acid
8	Parson's Beauty	Mild-sweet
9	Klondike	Mild-rich
10	Marshall	Mild, <u>rich</u>
11	Glen Mary	Mild to sweet
12	Monitor	Poor ^{er} flavor
13	Aroma	Mild
14	Enormous	Sweet
15	Haverlund	Mild
16	Splendid	Mild to sweet
17	Johnson Early	Mild
18	New York	Mild + sweet
19	Gandy	Rich
20	Brandy wine	Very acid
21	Brandy wine mid	Very acid
22	Cumbertland	Mild-sweet

Table VII con. Flavoury Berry⁶³

Variety number	Name of Variety	Flavour of Berry
23	Rough Rider	Mild - acid
24	Clyde	Slightly acid
25	Parker Earle Imp.	Mild & sweet
26	Sample	Mild sweet
27	Crescent	Slightly acid
28	Lovett	Mild, good
29	Parker Earle	Mild & rich
30	Ang. Luther	Sweet
31	Seaford	Mild
32	Palmer	Mild
33	Ridgeway	Sweet, pleasant flavor
34	Kansas	Sweet, good
35	Michels' Early	Mild
36	Up-to-Hute	Mild
37	Beckerwood	Acid
38	Cornman	Sweet
39	Senator Hunlap	Mild sweet
40	Hero	Rich
41	Lady Thompson	Mild, poor
42	Excellsiior	<u>Very acid</u> +
43	Maximus	Rich
44	Tennessee Pro.	Mild acid

Solidity of Berry.

64

A comparison of table VIII which gives data upon the solidity of the berry with table XXI which gives a list of those varieties producing large berries, will bring forth the fact that all large berries tend to be hollow though some are much worse than others. The Glen Mary often forms double berries or other malformations which leave the cavity with an exterior opening which dries the berry and invites insects to enter. Some berries with a cavity still retain a core while in others the core is eliminated. Either form of berry usually has a poorly attached cap which is liable to be removed too easily in picking, thus shortening the keeping period of the fruit.

65

Table VIII Solidity of Berry

Variety number	Name of variety	Solidity of Berry
1	Bubach	Solid
2	Nick Chmer	S. spongy
3	Miller	S. spongy
4	W ^m Belt	Hollow when large
5	Warfield	Solid
6	Bismark	Hollow when large
7	Wolverton	Spongy at core
8	Parson's Beauty	Spongy at core
9	Klondike	Spongy at core
10	Marshall	Firm
11	Glen Mary	Hollow
12	Monitor	Hollow, no core
13	Grona	Hollow around core
14	Enormous	Spongy core
15	Haverland	Hollow around core
16	Splendid	Hollow when large
17	Johnson Early	Solid
18	New York	Solid throughout
17	Gandy	Hollow, no core
20	Brandywine H.	Hollow when large
21	Brandywine Mich.	Hollow when large
22	Cumberland	Spongy at center

Table VIII Con. Solidity of Berry. ⁶⁶

Variety Number	Name of Variety	Solidity of Berry
23	Rough Rider	Solid
24	LeLyde	Hallow around core
25	Parker Earle Imp.	Hallow near large
26	Sample	Solid
27	Crescent	Solid, core spongy
28	Lovett	Solid, core
29	Parker Earle	Hallow
30	Ing Luther	Solid
31	Stearford	Solid
32	Palmer	Solid
33	Ridgeway	Solid
34	Kansas	Solid
35	Michels Early	Solid
36	Up-to-Hate	Solid
37	Beelerwood	Solid
38	Hormann	Solid
39	Senator Hunk	Solid
40	Hero	Solid
41	Lady Thompson	Solid
42	Excelsior	Solid
43	Maximus	Solid
44	Tennessee Pro.	Hallow

Color of Interior of Berry. ⁶⁷

Table IX gives the color of the meaty portion of the berry. This character of itself may not be of vital importance in the selection of varieties, yet it has considerable influence in adding^{to} or subtracting from the invitingness of the fruit, especially when served sliced. Solidity and color of the meaty portion may appear to be fine points, yet when in competition with high grade fruit for a select trade every point has its weight and importance. ~~In~~ but very few exceptions the rich dark red is preferred and the lighter colors are discriminated against. The whiteness of the Bederwood is hardly to be compared with the deep rich red of the Marshall.

Table IX Color of Interior of Berry ⁶⁸

Variety number	Name of Variety	Color of Interior of Berry
1	Bubach	White
2	Nick Chmer	Creamy red
3	Miller	Creamy red
4	W ^m Belt	White with red core
5	Watfield	Extremely ^{blood} deep red.
6	Bismark	White
7	Wolverton	Hot red till very ripe
8	Parson's Beauty	Red, light ^{core} around
9	Klonlike	^{white} deep red to center
10	Marshall	Rich deep red.
11	Glen Mary	Hot red till very ripe
12	Monitor	Light red
13	Uromu	Dark red to center
14	Enormous	^{uniform appearance} Creamy white
15	Haverland	White
16	Splendid	White meat, red core
17	Johnson Early	Light red
18	New York	White meat, red core
19	Gandy	White
20	Brandywine Ill	Light around core
21	Brandywine Mich	Light around core
22	Cumberland	Creamy ^{white} red

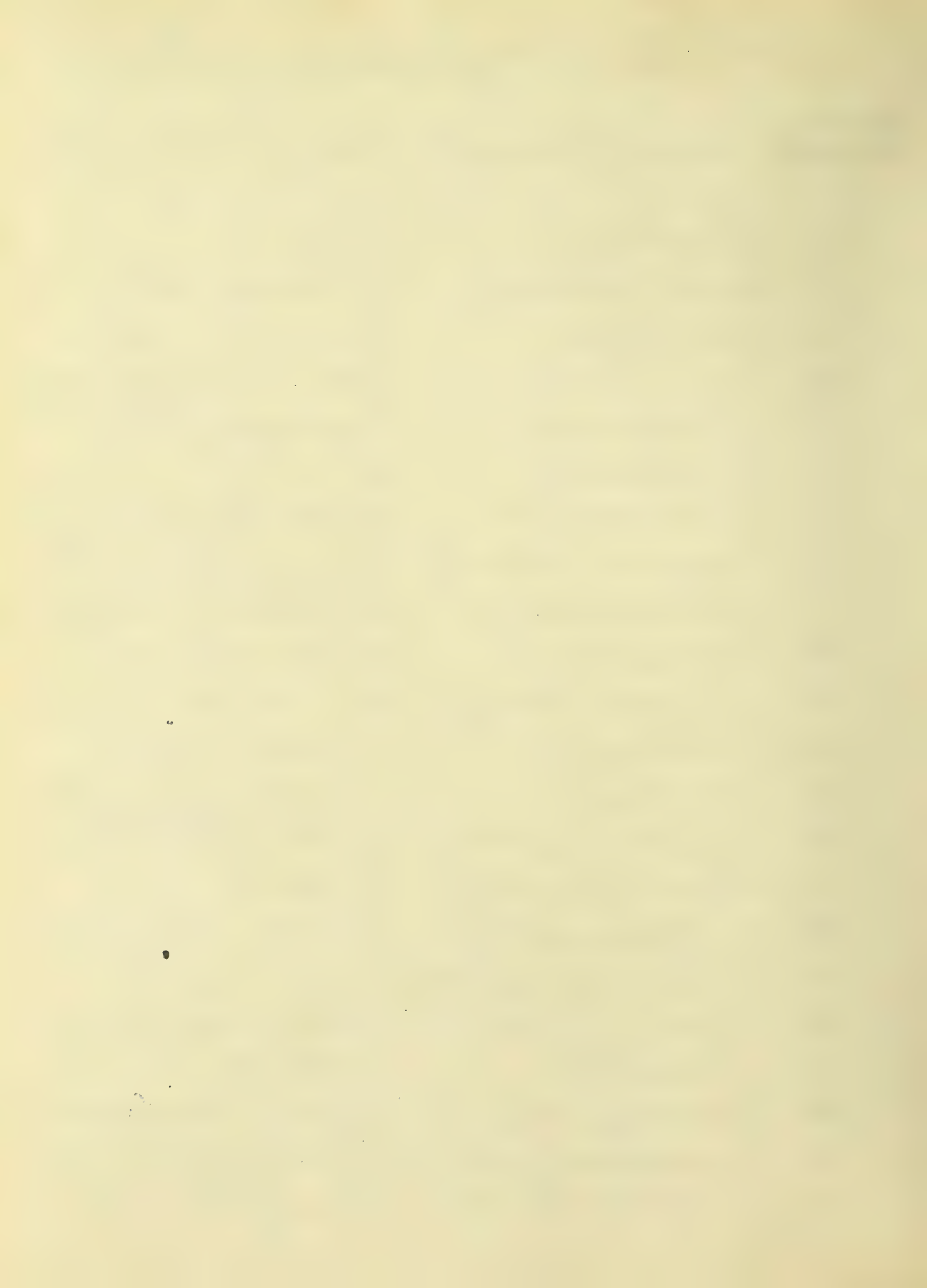


Table IX con. Color of Interior of Berry. ⁶⁹

Variety Number	Name of Variety	Color of Interior of Berry
23	Rough Rider	White around core
24	Clyde	Deep rich red ^{ripe} when
25	Parker Earle Imp	Red to center
26	Sample	Deep red to center
27	Crescent	Light
28	Lovett	Red to core
29	Parker Cuttle	^{in the juicy ripe} Creamy red.
30	Wm. Luther	Dark
31	Seaford	White, cross-red
32	Palmer	Light
33	Ridgeway	^{fine ring around core} Fine delicate red,
34	Kansas	^{deep red around core} Dark red,
35	Michel's Early	Deep red to center
36	Up-to-Hate	White
37	Bulerwood	White
38	Wormann	Light
39	Senator Hunlap	Light + red core
40	Hero	Light to core
41	Lady Tompson	White
42	Excelsior	Deep red to center
43	Maximus	Deep red to center
44	Tennessee Pro.	White

Shape of Berry.

70

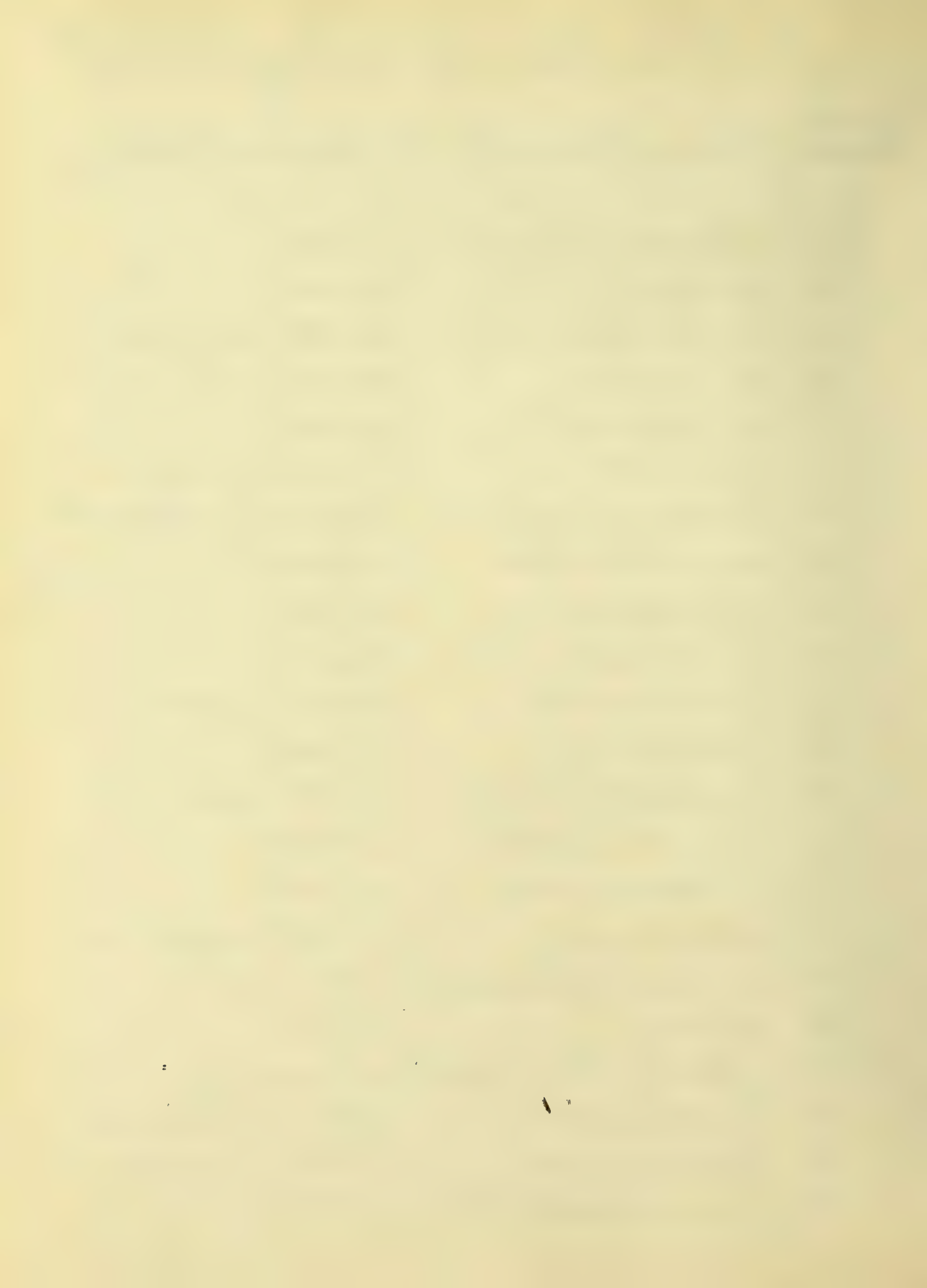
Uniformity in shape adds to the appearance and therefore to the saleableness of a berry. The more compact, smooth and symmetrical a berry the more saleable it is. Berries with sharp protrusions are more liable to bruises in handling. As a rule but little objection can be raised to the shape of most varieties of strawberries, yet the large fan shaped W^m Belts and the double Glen Mary berries at times are undesirable. Data upon this subject is given in table X.

Table X Shape of Berry.⁷¹

Variety number	name of Variety	Shape of Berry.
1	Bubach	Good
2	Nick Ohmer	Uneven
3	Miller	Good, round
4	Wm Belt	Uneven, fan-shaped
5	Warfield	Good
6	Bismark	Good
7	Wolverton	Good
8	Parson's Beauty	Good +
9	Klondike	Good
10	Marshall	Good +
11	Glen Mary	Fair, <u>uneven</u> , <u>double</u>
12	Monitor	Good but uneven
13	Aroma	Some double
14	Enormous	Good & even
15	Haverland	Good
16	Splendid	Fair to good
17	Johnson Early	Uneven
18	New York	Good
19	Gandy	Fair
20	Brandywine Ill.	Good
21	Brandywine Mich.	Good
22	Cumberland.	Uneven

Table X Con. Shape of Berry⁷²

Variety number	Name of Variety	Shape of Berry
23	Rough Rider	Fair
24	Clayde	Good
25	Parker Earle Imp.	Good, long neck
26	Sample	Good +
27	Crescent	Good +
28	Lovett	Uneven, very.
29	Parker Earle	Neck objectionable
30	Aug Luther	Good -
31	Seaford	Good
32	Palmer	Fair
33	Ridgeway	Good + + even
34	Kansas	Good
35	Michel's Early	Little uneven
36	Up-to Date	Good
37	Beiderwood	Good
38	Dorman	Little uneven
39	Senator Dunlap	Good +
40	Hero	Fair
41	Lady Thompson	Good
42	Excelsior	Good + ^{rounded} but small
43	Maximus	Little uneven
44	Tennessee Pro.	Poor



Uniformity of Ripening.⁷³

When berries are being grown for a local market (and wherever perfectly ripe berries are demanded, it is very unfortunate to have a variety in which there is a tendency for the tip or lower side of the berry to remain green or white, after the upper side has attained full ripeness. Such is often the case with the Bederwood and Glen Mary. An expert can in a majority of cases tell by the shade of the color of the upper side just about how ripe or well colored the other side is; but about three of every four pickers seem to be color-blind to such fine distinctions, and for this reason the habit of the ^{some varieties of berries} under side or tip to color up much later than the upper side is often a serious objection. Data upon this subject may be found in table XI.

Table XI Uniformity of Ripening ⁷⁴

Variety Number	Name of Variety	Uniformity of Ripening
1	Bubach	Lower last, yet fairly uniform
2	Nick Chmer	Lower last, yet fairly uniform
3	Miller	Good
4	Wm Belt	Good
5	Warfield	Good
6	Bismark	Lower last, yet fairly uniform
7	Wolverton	Good
8	Parson's Beauty	Tip last
9	Klondike	Poor, white on under ^{side}
10	Marshall	Good
11	Glen Mary	Underside & tip last
12	Monitor	Underside last, yet fairly ^{uniform}
13	Groma	Underside last, yet fairly ^{uniform}
14	Enormous	Good
15	Haverland	Good -
16	Splendid	Good -
17	Johnson Early	Good -
18	New York	Good -
19	Gandy	Tip last
20	Brandywine, Ill.	Good
21	Brandywine, Mich.	Good
22	Cumberland	Tip last

Table XI Con. Uniformity of Ripening ¹⁵

Variety Number	Name of Variety	Uniformity of Ripening
23	Rough Rider	Good -
24	Clayde	Good
25	Parker Earle Imp	Good -
26	Sample	Good
27	Crescent	Good
28	Lovett	Good -
29	Parker Earle	Good
30	Cing Luther	Good
31	Shaford	Not uniform
32	Palmer	Fair only
33	Ridgeway	Good
34	Kansas	Poor
35	Michel's Early	Fair
36	Up-to-Date	Good - ^{grows before ripe.}
37	Bederwood	^{if mutton straw carrier all white} Very bad, nose & tip lost
38	Dorman	Fair -
39	Senator Dunlap	Good, tip lost
40	Hero	Good
41	Lady Thompson	Fair
42	Excelsior	Good
43	Maximus	Good -
44	Tennessee Pro.	Point & bottom lost.

Keeping Quality of Berry.⁷⁶

To the grower who must seek a distant market the keeping quality of a berry is an all-important matter. Even if a berry possess an ideal color, flavor, size and numerous other pleasing qualities but lacks keeping quality, the variety is useless. Table XII gives data on special observations made at various times during the season. It is a record of the condition in which the berries reached the cellar for grading. The left hand column contains the variety number. The top line gives the date of observations. The last two columns are a summary of the table. The first gives the total observations made and the last column gives the number of times the fruit was soft. "Firm" means that the fruit was in condition for shipping purposes or could be held for a

day and still be saleable. "Firm"⁷⁷ means that the fruit was unusually firm. "Firm -" means that, while the fruit was not soft, it lacked the desired firmness which makes it a good shipper. "Soft" means that the fruit was saleable only if put on the near by market at once. "Soft -" means that the fruit was hardly firm enough to ship, while "soft + " means that the fruit would soon "leak" if put in a crate.

The first two pages (pp. 81 + 82) of table XII record the condition of the fruit as it came to the "grader" just after being picked. The following eight pages (pp. 83 to 90 inclusive) of table XII record four special observations made at four different times during the picking season. These special observations consisted in placing one, two or three ^{quarts} of fruit from each variety into a crate and letting ^{it} stand in the

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cellar for forty eight hours and then making notes upon the color, flavor, firmness and any other factors affecting the storable-ness of the berry. The lack of data upon all varieties at each of the four special observations is due to one of the following circumstances: (1). The variety was not in bearing at that date. (2). Not enough fruit was produced that day to make a satisfactory test. (3). After grading, the fruit may have been too badly bruised to go into the test. Since it was essential that all varieties receive equal treatment, no bruised or roughly handled fruit was used in the experiment. A study of pages 87 and 88 brings out the fact that those varieties which remain firm the longest have the most wax for a protection. Another correlation is that in a large majority of cases it is a bright glossy or

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a dark red and not the light colored fruit which remains firm the longest. The last two pages (pp. 91 and 92) of table XII constitute a summary of both phases of the observations upon the keeping quality of the berry. Column I gives the number of times the forty eight hour keeping test was repeated with each variety. Column II gives the number of times the test proved unsatisfactory. By unsatisfactory is meant that the fruit was not saleable at the end of the forty-eight hours. Columns III and IV are taken from pages 81 and 82 in order to compare the keeping quality of the fruit with the condition it reached the "grader". Columns I and II are an expression of the keeping quality of each variety by trial while columns III and IV are an expression of the apparent keeping quality of the fruit as it reached

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the cellar for grading. Columns
V and VI are an expression of
the sum of observations on both
phases of the keeping quality of
the different varieties. Column
V is obtained by adding the figures
in columns I and III. Column
VI is obtained by adding the fig-
ures in columns II and IV.
Thus we have an expression of
the total observations on this sub-
ject and with it an expression
of the number of times serious
objections were found.

Table XII Keeping Quality of Berry⁸¹

Variety Number	June 2	June 5	June 7	June 9	June 12	June 14	June 16	June 19	June 22	June 24	# of times Observed	times Soft
1	firm			firm	soft	firm	firm	firm			6	1
2		firm		firm		firm	firm				4	0
3				firm	soft	soft	firm	firm			4	2
4	firm				soft		firm	firm	firm		5	1
5		firm		firm			firm				3	1
6	firm			firm		firm	firm				5	0
7	soft			firm		soft					3	2
8	soft			firm		firm	firm	firm			5	1
9				firm	firm	firm	firm		soft	firm	6	1
10	firm	firm		soft		firm	firm				5	1
11		soft	soft	firm	firm	firm					5	2 ⁺
12	soft	soft	soft	firm		soft	soft	soft			7	6
13		firm	firm		firm	firm	firm	firm			6	0
14			soft				firm	firm			3	1
15	soft	firm	soft		soft	firm	soft				6	4
16	soft	firm	soft	firm	firm	firm	firm	soft			8	3
17	firm	firm	soft	soft	firm	firm					6	2
18	soft	soft			firm	firm					4	2
19				firm	firm	firm		firm			4	0
20		firm	firm	firm	firm	soft	soft	firm	firm		8	2
21		firm	firm	firm	firm	firm	firm	soft	firm		7	1
22			firm	firm			firm	soft			4	1

Table XIII con. Keeping Quality of Berry.

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Variety Number	June 2	June 5	June 7	June 9	June 12	June 14	June 16	June 19	June 22	June 24	# of times Observed	Soft
23				firm	firm	firm	firm	soft	firm	firm	6	1
24	soft	firm	soft		firm	soft					5	3
25	firm			soft	soft	firm	firm	soft			6	3
26		firm		firm	firm		firm				4	0
27	soft	firm	firm	firm	soft	soft		firm			7	3
28			soft	firm	firm	soft		firm	firm		6	2
29					firm	firm	firm	firm	firm		5	0+
30	soft	soft	soft	firm	firm						5	3
31	soft				soft	firm	firm				4	2
32		firm			firm	firm	soft				4	1
33		firm				firm	firm	soft	firm		5	1+
34	firm	firm	soft	firm	firm	firm	firm	firm			8	1
35			soft		soft						2	2
36			soft	soft		firm	firm				4	2
37	soft	soft	soft	soft	firm	firm	firm	firm			8	4
38			soft	soft	firm	soft	soft				5	4
39		soft	soft			soft	firm	soft			5	4
40			firm	firm	firm	firm	firm				5	0
41			soft	soft	firm	firm	firm				5	2
42	firm	firm	firm	firm	firm	firm	firm	firm	firm	firm	10	0
43	soft		soft	soft	soft	soft					3	3
44				soft		soft	soft				3	3

Table XII con Keeping

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Quality of Berry.

varieties
number

varieties

Keeping Quality: Picked
May 31. Data taken June 1.

1	Bubach	Color good-, fairly firm.
2	Pick Chmer	
3	Miller	
4	W ^m Belt	
5	Warfield	Color good+, firm+
6	Bismark	Sluggish, soft
7	Wolverton	Color good, firm
8	Parson's Beauty	Color good, firm
9	Klondike	
10	Marshall	Color good, a little soft.
11	Glen Mary	
12	Monitor	Color fair, firm-
13	Aroma	
14	Enormous	Color good, firm-
15	Haverland	Color good, firm-
16	Splendid	Color good, firm
17	Johnson Early	
18	New York	
19	Gaddy	
20	Brandywine ^{ell}	
21	Brandywine ^{much}	
22	Cumberland	

Table XII Con. Keeping Quality ⁸⁴
rry.

Berry.

1890
1891

Admission Hunter Variety

Receiving Quarters: Picked
May 31. Data taken June 1.

- | | | |
|----|--------------------|--|
| 23 | Rough Rider | |
| 24 | Clyde | Color fair, firm - |
| 25 | Parker Curled Imp. | |
| 26 | Sample | Color good, firm |
| 27 | Crescent | |
| 28 | Lovett | Color good, firm - |
| 29 | Parker Earle | |
| 30 | Aug Luther | Color fair, several soft |
| 31 | Seaford | Color excellent, ^{tops wilted} firm + |
| 32 | Palmer | Color dingy, firm |
| 33 | Ridgeway | |
| 34 | Kansas | |
| 35 | Michels' Curly | Color dingy, firm |
| 36 | Up-to-Hutt | Color poor, soft |
| 37 | Bedderwood | Color good, firm |
| 38 | Hormann | |
| 39 | Senator Hunlap | Color excellent, firm |
| 40 | Hero | Color good, firm - |
| 41 | Lady Thompson | Color excellent, little soft |
| 42 | Excelsior | Dingy on top, soft - |
| 43 | Maximus | |
| 44 | Tennessee Pro. | Color good, firm |

Table **XII** Con. Keeping Quality of Berry. ⁸⁶

Variety Number	Name of Variety	Keeping Quality: Picked June 2, Data taken June 4
1	Bubach	Color fair, firm
2	Nick Chimer	
3	Miller	
4	W ^m Bell	
5	Warfield	Color good, firm
6	Bismark	Mouldy, soft
7	Wolverton	Mouldy, soft
8	Parson's Beauty	Color good, firm
9	Klonlike	Mouldy, soft
10	Marshall	Mouldy, soft
11	Sten Mary	
12	Monitor	Color good, firm
13	Arroma	
14	Enormous	Dingy, cap brown, firm
15	Havertland	Color <u>excellent</u> , firm
16	Splendid	Color good, firm
17	Johnson Early	Color fair, some mouldy, firm
18	New York	Color good, firm
19	Garday	
20	Brandywine ^{all}	
21	Brandywine ^{Mich}	
22	Cumberland	

Table XII. Cor. 1. Keeping Quality of Berry. ⁸⁶

Variety Number	Name of Variety	Keeping Quality: Picked June 2, Data taken June 4.
23	Rough Rider	
24	Clyde	
25	Parker Earle Imp.	
26	Sample	Color dingy, soft
27	Crescent	Color good, firm
28	Lowett	Color fair, firm -
29	Parker Earle	
30	Aug Luther	Color dingy, soft & rotten
31	Sturford	Color good, firm
32	Palmer	Color dingy, mouldy, firm
33	Ridgeway	
34	Kansas	
35	Michels Early	Color dingy, firm, some rot.
36	Up-to-Date	Color dingy, soft
37	Bedderwood	Color fair, firm -
38	Hornman	
39	Senator Hunley	very poor caps - rotten. only 2 poor berries in box. Color <u>excellent</u> , firm
40	Hero	Color good, firm
41	Lady Thompson	
42	Excelsior	
43	Maximus	
44	Tennessee Pr.	Color dingy, firm.

Table XIII Con. Keeping Qualities of Berry. ⁸⁷

Variety Name, Variety Keeping Qualities: Picked
June 7. (Scale taken June 9.)

1	Bubach	
2	Hick Chamber	
3	Miller	
4	Wm Belt	
5	Warfield	
6	Bismark	Color light, little soft, very ^{waxy} little
7	Wolverton	Color light firm, wax med.
8	Parson's Beauty	Color bright, firm, very waxy
9	Klonlike	Color bright, firm, wax med.
10	Marshall	
11	Glen Mary	Color dark, little soft.
12	Monitor	Color bright, firm, wax med.
13	Croma	Color excellent, firm, wax med +
14	Enormous	Color dark, firm, wax med
15	Haverland	Color bright, firm, wax med
16	A splendid	Color bright, soft, wax little.
17	Johnson Early	
18	Hero York	Color dark firm. much wax
19	Gandy	
20	Brandywine ^{see}	
21	Brandywine ^{with}	
22	Cumberland	

Table XII Con. Keeping Qualities of Berry.⁸⁸

Variety Number	Name of Variety	Keeping Qualities: Picked June 1. Date taken from
23	Rough Rider	
24	Le Lytle	Color green , firm, wax med
25	Parker Earle Imp	
26	Sample	
27	Crescent	Color light, firm, wax med
28	Lovett	Color dark, firm, wax med
29	Parker Earle	Color bright, firm, wax med.
30	Aug Luther	
31	Seaford	
32	Pulmer	
33	Ridgeway	Color bright, firm, wax med
34	Kansas	
35	Michels Early	
36	Up-to-Date	
37	Bedderwood	
38	Dorman	
39	Senator Dunlap	
40	Hero	
41	Lady Thompson	
42	Excelsior	Color dark, firm, wax much
43	Maximus	
44	Tennessee Pro.	

Table XII Con. Keeping Qualities (Berry) 89

Variety Number	Name of Variety	Keeping Quality: Picked June 9. Data taken June 11.
1	Buback	Firm not moulded.
2	Mick & Thmer	Color excellent, firm, work.
3	Miller	Sticky in spots, firm; mouldy.
4	W ^m Belt	Soft, mouldy.
5	Warfield	Color good, firm-
6	Bismark	Mouldy, unsalable.
7	Wolverton	Color good, flavor good, firm
8	Person's Beauty	Sticky, dry, firm, flavor good
9	Klondike	Color & flavor good, firm
10	Marshall	
11	Glen Mary	Sticky & mouldy
12	Monitor	Some good, some poor
13	Ceroma	Flavor & color good, firm
14	Enormous	Color sticky, soft & rotten
15	Haverland	
16	Splendid	Color sticky, mouldy &
17	Johnson Early	lost
18	New York	Color sticky, soft, some rot.
19	Garry	Color sticky, firm-
20	Brandywine ²¹¹	Sticky mouldy in spots, firm
21	Brandywine ^{mid}	Sticky, mouldy in spots, firm
22	Cumberland	Color & flavor good, firm

Table XII Con. Keeping Qualities. Berry 90

Variety Number	Name	Variety	Keeping Qualities Picked June 7. Data taken June 11.
23	Rough Rider		Color good, dry, firm
24	Clyde		Color dingy, soft, ⁱⁿ mummy
25	Parker Curle Imp.		Color fair, soft, mouldy in ^{2 days}
26	Sample		Soft & dingy.
27	Crescent		Color dingy, firm, soft around
28	Lovett		Color dingy, firm, soft around
29	Parker Curle		Color & flavor fair, firm -
30	Ing Luther		Color & flavor fair, firm
31	Staford		Soft & mouldy
32	Palmer		Color dingy, soft
33	Ridgeway		Color & flavor good
34	Kansas		Color dingy, firm, soft around
35	Michels Curly		Color fair, some good, some poor
36	Up-to-Hut		Color fair, some good, some poor
37	Butterwood		Color fair, some good, firm -
38	Dormar		Color dingy, soft & rotten
39	Senator Dunlap		Color good, flavor good, firm -
40	Hero		Color good, firm, some mouldy
41	Lady Thompson		Color fair, flavor ok, firm -
42	Exterior		Color dingy, firm
43	Maximus		Color dingy, firm, dry
44	Tennessee Pro.		Color dingy, soft - juicy.

Table XII Con. Summary of
Keeping Qualities of Berry

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Variety Number	Name & Variety	Number of 4.8 oz trials	Number of 4.8 oz soft	Number of 4.8 oz trials	Number of 4.8 oz soft	total Observations	total Object cores
		I	II	III	IV	V	VI
1	Buback	3	1	6	1	9	2
2	Nick Chmer	1	0	4	0	5	0
3	Miller	1	1	4	2	5	3
4	W ^m Belt	1	1	5	1	6	2
5	Warfield	3	0	3	1	6	1
6	Bismark	4	3	5	0	9	3
7	Wolverton	4	1	3	2	7	3
8	Parson's Beauty	4	0+	5	1	9	1+
9	Klondike	2	0	6	1	8	1
10	Marshall	2	1+	5	1	7	2+
11	Glen Mary	2	2-	5	2+	7	4
12	Monitor	4	1+	7	6	11	7+
13	Brown	2	0	6	0	8	0
14	Enormous	4	2	3	1	7	3
15	Haverland	3	0	6	4	9	4
16	Splendid	4	2+	8	3	12	5+
17	Johnson Early	1	1-	6	2	7	3-
18	New York	3	1	4	2	7	3
19	Gardely	1	1-	4	0	5	1-
20	Brandywine ²¹¹	1	1	8	2	7	3
21	Brandywine ^{Mich}	1	1	7	1	8	2
22	Cumberland	1	0	4	1	5	1

Table XII CON. Summary of
 Keeping Qualities of Berries.

Variety Number	Name of Variety	Number of 48 hr Trials	Number times Soft	Number times of Objections	times Soft	total Observations	total Objections
23	Rough Rider	1	0	6	1	7	1
24	Glyde	3	1	5	3	8	4
25	Parker Earle Imp	1	1-	6	3	7	4-
26	Sample	3	2	4	0	7	2
27	Crescent	3	1	7	3	10	4
28	Lovett	4	0	6	2	10	2
29	Parker Earle	2	0	5	0+	7	0+
30	Aug Luther	3	2+	5	3	8	5+
31	Steufer	3	1	4	2	7	3
32	Palmer	3	3	4	1	7	4
33	Ridgeway	2	0	5	1+	7	1+
34	Kansas	1	1-	8	1	9	2-
35	Micheli's Early	3	2+	2	2	5	4+
36	Up-to-Late	3	2+	4	2	7	4+
37	Bederwood	3	1	8	4	11	5-
38	Dorman	1	1	5	4	6	5
39	Senator Dunlap	3	0-	5	4	8	4
40	Hero	3	0	5	0	8	0
41	Lady Thompson	2	1-	5	2	7	3-
42	Excelsior	3	2	10	0	13	2
43	Maximus	1	1	3	3	4	4
44	Tennessee Pro.	3	2	3	3	6	5



Cap of Berry.

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Another item which detracts from the saleableness of a berry is an excessively large cap. This point is exemplified in the Brandy wine, whose cup often extends beyond the circumference of the berry. If the boxes are not "faced"; that is, the points of the berries in the top layer turned up so that the cup side is down, a perfect mat of cups will cover the the top of the box and hide the fruit, thus greatly detracting from its beauty and saleableness. Large caps unless picked with a long stem soon wilt. This increases the unsaleableness of the fruit. The sepals constantly evaporate moisture and must have a source of supply (a long stem) or soon wilt and turn brown. When gathering data for table XIII it was found that the condition of the plant and fruit was a determining factor in regulating

the shade of color possessed by⁹⁴
the cap. The brighter and stronger
the plant, the brighter and
stronger the cap. Those berries
which were affected by excessive
sunlight or drouth held their
caps more tenaciously unless
so badly injured as to be culled.

Table XIII gives data upon the
size, color and firmness of attach-
ment of the cap. In trying to
obtain data upon the firmness
of attachment it was found that
there were no extremes in this re-
spect, yet some varieties are much
easier to "cup" than others. The
ripeness of a berry has much to do
with the ease of "cupping". A
still greater factor is the weather.
In dry seasons or periods berries
are more firmly attached to their
caps than in rainy periods.

Table XIII Cap of Berry.

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Variety No.	Name of Variety.	Size	Color (Shade of green)	Firmness of attachment to Berry. [easy, medium or hard to cap]
1	Bubach	Medium	Light	Medium
2	Pick Chmer	Medium	Light	Medium
3	Miller	Small	Light	Hard
4	W ^m Belt	Small -	Light	Hard -
5	Warfield	Small	Light	Hard
6	Bismark	Medium	Light	Hard -
7	Wolverton	Medium	Light	Easy
8	Parson's Beauty	Medium	Reddish ^{brown}	Easy
9	Klondike	Small	Light	Medium
10	Marshall	Medium	Light	Medium
11	Glen Mary	Medium	Light	Easy
12	Monitor	Large	Dark	Easy
13	Crowna	Large +	Dark	Easy
14	Enormous	Medium	Light	Medium
15	Haverland	Small	Light	Hard
16	Splendid	Long + ^{or} stout	Light	Easy
17	Johnson Early	Medium	Light	Medium
18	New York	Large	Light	Easy
19	Gaddy	Medium	Light	Medium
20	Brandywine ^{2nd}	Extra large	Dark	Easy
21	Brandywine ^{1st}	Extra large	Dark	Easy
22	Cumberland	Medium	Light	Medium

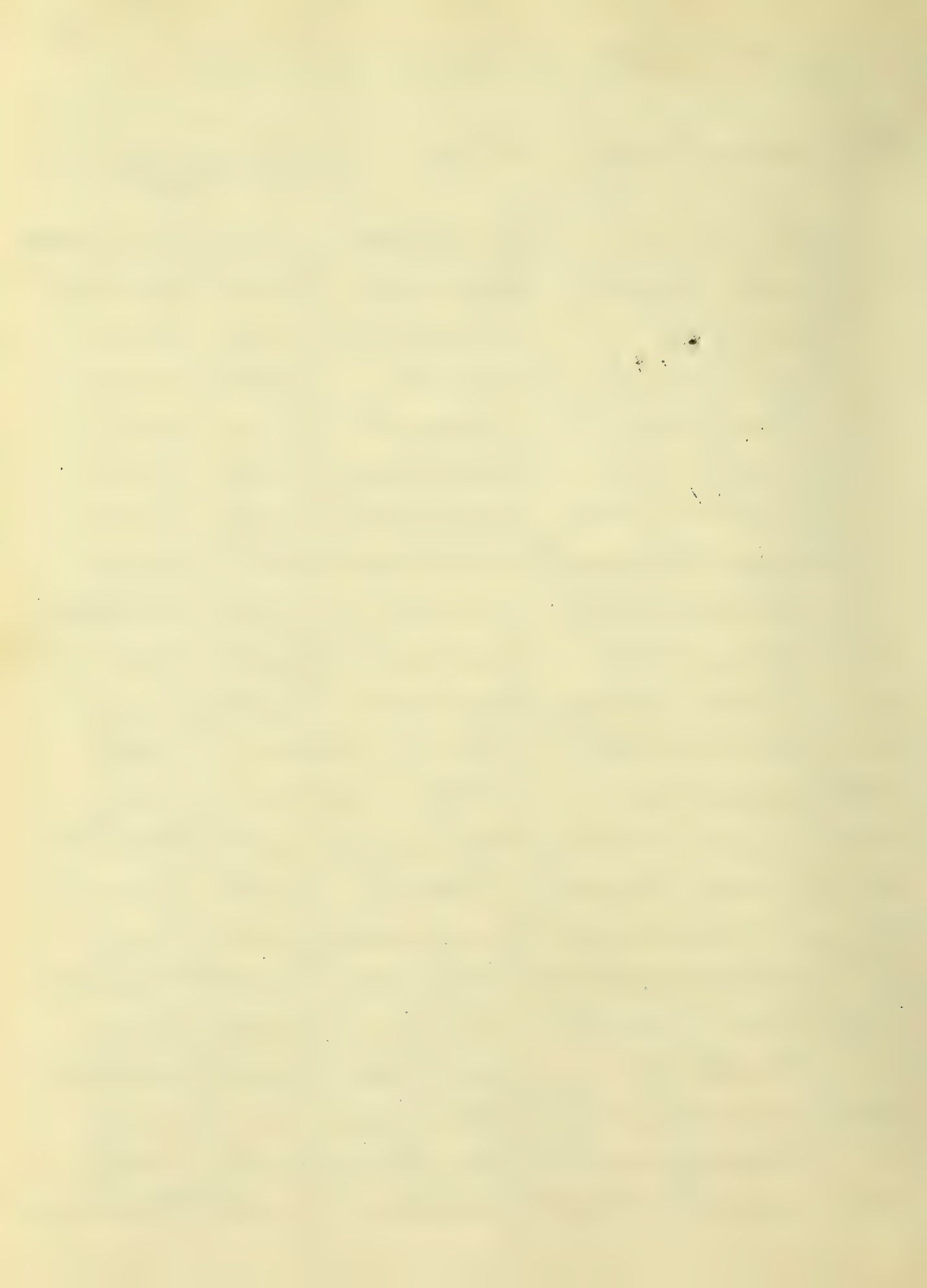


Table XIII con. Caps of Berry

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Variety num. Ber.	Name of Variety	Size	Color	Firmness of attachment to Berry
23	Rough Rider	majority - small. Points of most sepal - split.	Light	Cap. imbedded Medium
24	Clyde	Medium	Light	Easy
25	Parker Earle Imp	Small	Light	long neck Hard-
26	Sample	Medium	Light	Hard-
27	Crescent	Small	Light	Hard
28	Lovett	Medium	Light	Easy
29	Parker Earle	Small	Light	Easy
30	Ing. Luther	Long + slender	Dark	Hard
31	Staford	Large + long + slender	Light	Hard
32	Palmer	Large	Light	Hard-
33	Ridgeway	Large +	Dark	Easy
34	Kansas	Large +	Light	Medium
35	Micheli's Early	Small	Light ^{3/4 white}	Medium
36	Up-to-Hate	Medium	Light	Hard-
37	Bedderwood	Long + narrow	Light	Hard-
38	Dorman	Long + narrow	Light	Medium
39	Senator Dunlap	Narrow Medium	Light	Medium
40	Hero	Big sepal. 3 serrations at tip.	Light	Hard-
41	Lady Thompson	Medium	Light ^{almost colorless}	Medium-
42	Excelsior	Small	Dark	Hard
43	Maximus	Long + narrow	Light	Medium
44	Tennessee Pro.	Medium	Light	Hard-

Sub Fruit Stem.

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Table XIV gives data upon the sub fruit stem which is that portion of the stem to which the berry is directly attached. Any plant whose sub fruit stem is less than one inch in length is objectionable because in trying to sever the stem the fingers of the pickers are liable to bruise or crush the berry or pull the berry off the stem without the cap, thus lessening the keeping quality of the fruit. Brittleness of stem is a quality to be desired because the stem breaks off easily for the picker. Toughness of stem is objectionable from the picker's stand point. The stems of vigorous Brandy wine plants often are so tough as to prohibit the use of small children or those with weak finger nails as pickers.

Table XIV

Sub Fruit Stem.

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Variety mich. Ber.	Name of Variety	Size	Length ^{inches}	Lumber ^{rough} or brittle.
1	Bubach	Small	1 - 1½	Lumber
2	Hick Ohmer	Medium+	1	Lumber
3	Miller	Medium	½ - 1	Lumber ^{tough}
4	W ^m Belt	Small	1 - 2	Lumber ^{tough}
5	Warfield	Small	1	Lumber
6	Bismark	Medium	½ - 1½	Lumber ^{tough}
7	Wolverton	Medium	1 - 2	Lumber
8	Parson's Beauty	Medium	1 - 2	Lumber ^{tough}
9	Klondike	Medium	1 - 1½	Lumber ^{tough}
10	Marshall	Medium	1	Lumber
11	Glen Mary	Small	1 - 1½	Lumber ^{rough}
12	Monitor	Medium	1	Lumber
13	Aroma	Large	1 - 1½	Lumber ^{rough}
14	Enormous	Medium	1 - 1½	Lumber
15	Haverland	Small	1 - 1½	Brittle
16	Splendid	Medium	1	Tough
17	Johnson Early	Small	1	Tough
18	New York	Medium	1 - 2	Tough
19	Gardely	Medium+	1 - 1½	Brittle + stiff
20	Brandywine ^{el}	Large +	1 - 2	Tough +
21	Brandywine ^{mich}	Large +	1 - 2	Tough + ^{stiff}
22	Cumberland	Medium	1	inter +

Table XIV Con Sub Fruit & Stem. 99

Variety No.	Name of Variety	Size	Length	Limber stiff or brittle.
23	Rough Rider	Small	1-1½	Limber
24	Clyde	Small	1-2	Limber
25	Parker Earle Imp.	Small	¾-1	^{tough} Limber &
26	Sample	Medium	1-2½	Limber
27	Crescent	Small	1-3	^{tough} Limber &
28	Lovett	Small	1-2	Limber
29	Parker Earle	Small	½-1¼	Limber
30	Ing. Luther	Small	1-1½	^{very in.} Limber,
31	Seaford	Medium	1-2	Stiff & tough
32	Pubner	Medium	1½	^{very in.} Limber &
33	Ridgeway	Medium	1-3	Stiff & tough
34	Kansas	Large	1-2	Stiff & tough
35	Michel's Early	Small	1-2	^{tough to} Limber &
36	Up-to Hutt	Small	1	^{weak} Limber &
37	Bederwood	^{very} Small	1-2	^{weak} Limber &
38	Hormann	^{very} Small	1½-2	^{tough} Limber &
39	Senator Hunley	Small	1-2	^{very in.} small & limber
40	Hero	^{many berries have individual stems from crown} Medium	1½-3	Tough
41	Lady Thompson	Medium	1-3	Limber
42	Excelsior	Small	1	^{very in.} Limber,
43	Maximus	Small	1½-2	Tough
44	Tennessee Co.	Medium	1½-2	Tough

Main Fruit of stem

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The stronger and stiffer the main fruit stem, the better it holds up its load of berries from the dirt and moulding moisture. Stems which are almost as long as the leaf stems are objectionable for the reason that the flowers are more subject to frost and the fruit more liable to be dried up in a scorching sun. In this experiment there were no frosts occurring late enough to test the advantage or disadvantage of long and short fruit stems, but there was enough intense heat and sunlight to actually make that portion of the fruit which lay beyond the protection of the foliage to grow as culls, while that shaded by the foliage was not affected by the intense sunlight. This shows that those varieties which possess fruit stems that place the fruit

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beyond the protection of the foliage are to be discriminated against. Data upon the length, size and texture of the main fruit stem is given in table XV.

Table XV Main Fruit Stem 102

Variety number	Name of Variety	Size	Length	Texture
			in ^{1/2} ft.	limber, tough or brittle
1	Bubach	medium	3-6	Tough
2	Mich Chmer	medium	4-9	Tough
3	Miller	Large	3-6	Brittle
4	W ^m Belt	<small>some = long + brittle</small> Small	2-8	<small>tough</small> Limber
5	Warfield	Small	4-6	Tough
6	Bismark	Large	4-6	Tough
7	Wolverton	Large	4-7	Tough
8	Parson's Beauty	Medium	2-5	Tough
9	Klondike	Large	3-5	Tough
10	Marshall	<small>Some = short + stiff</small> <small>Some = long "limber"</small>	2-6	Brittle
11	Glen Mary	Large	4-8	Tough
12	Monitor	Medium	4-6	<small>tough</small> Limber
13	Aroma	Large	2-5	Stiff + tough
14	Enormous	Small	4-5	Tough
15	Haverland	Medium	4-7	Tough
16	Splendid	Medium	4-7	Brittle
17	Johnson Early	Small	4-6	<small>tough</small> Limber
18	New York	Medium	4-6	Tough
19	Gandy	Medium	4-7	Tough
20	Brandywine	Large +	6	Tough
21	Brandywine Mich	Large +	4-6	Tough
22	Cumberland	Large +	4-6	Brittle

Table XV con. Main Fruit Stem 103

Variety No.	Name of Variety	Size	Length	Texture
23	Rough Rider	small very	4 - 6	Timber ^{very tough}
24	Clyde	medium	4 - 6	Timber ^{tough}
25	Parker Curle Imp.	Large	4 - 6	Tough
26	Sample	small very	4 - 8	Tough
27	Crescent	small very	4 - 8	Brittle
28	Lovett	medium	4 - 8	Brittle
29	Parker Curle	medium	4	Timber
30	Ing Luther	medium	3 - 5	Tough
31	Staford	Large +	3 - 6	Tough
32	Palmer	medium	2	Tough ^{held up}
33	Ridgeway	Large	3 - 6	Tough ^{held up}
34	Kansas	medium	4	Tough
35	Michels Early	Small	4 - 6	Tough ^{held up}
36	Up-to-Date	medium	4	Brittle ^{stiff}
37	Bedderwood	medium	1 - 4	Timber ^{easy to pick}
38	Dorman	medium	6	Tough
39	Senator Dunlap	Small	3 - 6	Brittle -
40	Hero	Large	2 - 8	Tough ^{timber}
41	Lady Thompson	medium	5 - 8	Brittle -
42	Excelsior	Large	3	Tough ^{stiff}
43	Maximus	Large	2 - 3	Tough ^{timber}
44	Tennessee Pro.	Small	3 - 4	Timber



Foliage.

Table XVI gives data upon the amount and color of foliage, also the length of leaf stems, size of leaves and resistance to rust and other diseases. The following terms were used in describing the amount of foliage.

"Abundant and thick" was applied to the largest and heaviest foliage in the test.

"Abundant or ample" = Apparently enough to meet all demands.

"Medium" = Scarcely enough. Close to the danger line.

"Thin" = Not many leaf stems, not dense, not enough except in a favorable season.

"Scant" = Not enough to meet the demands of the fruit. Fruit of such varieties suffered severely in hot, dry times.

"Scarcely any" = Almost destitute of leaves.

All dimensions are in inches and all differences in color apply to shades of ^{green}.

Table XVI Foliage.

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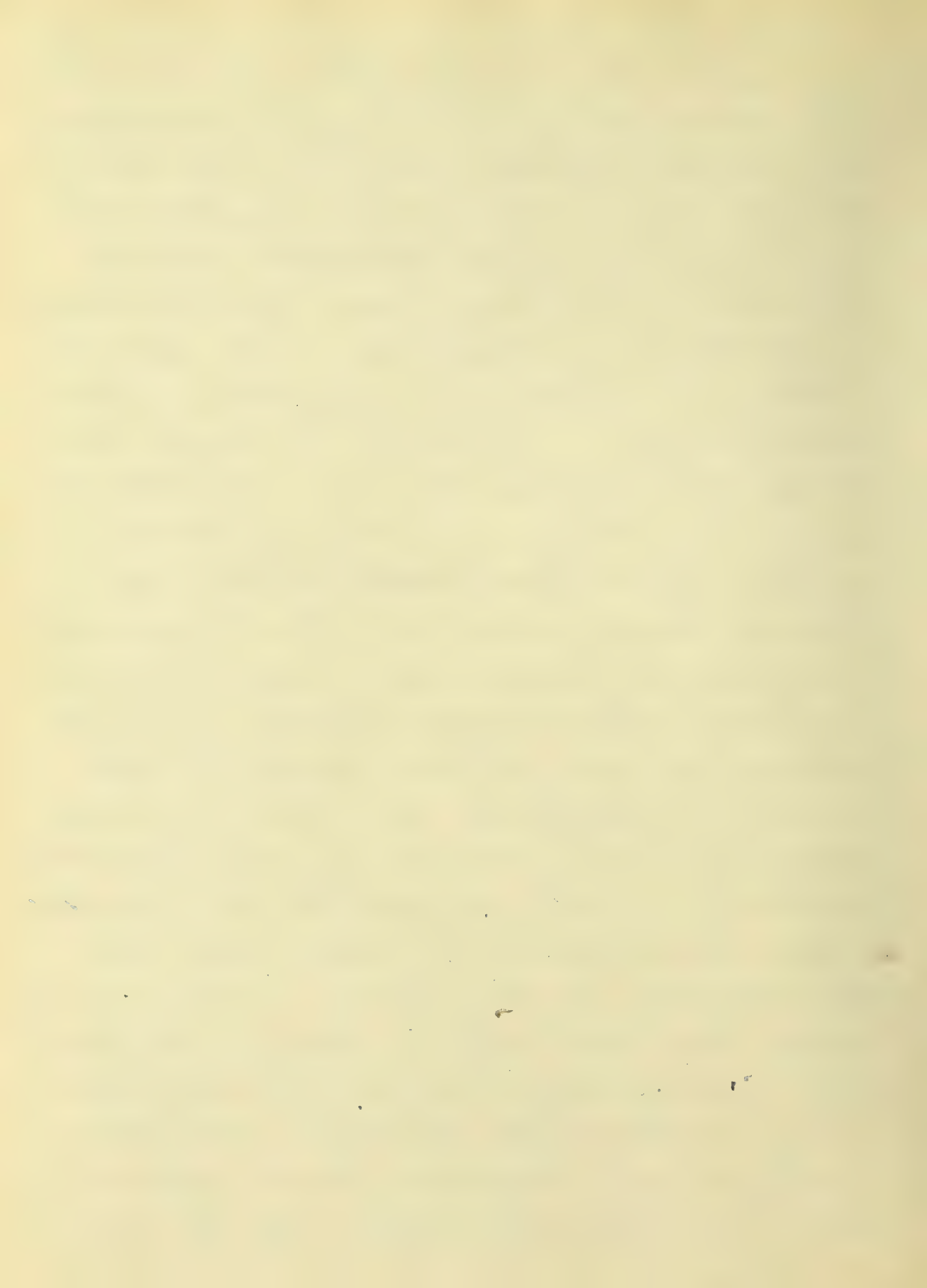
Variety Amount	Amount	Color	Length of leaf stem	Size of leaves	Resistance to rust, etc.
1	Scant	Dark ^{very}	6-7	3 x 3	Medium
2	Medium	Dark ^{thick}	6-8	3 x 5 1/2	Good
3	Medium-	Light ^{thin}	6	4 1/2 x 3	Medium
4	Ample, tall	Dark	6-12	4 1/2 x 3	Good
5	Scant	Dark	6	2 1/2 x 4	Poor
6	Scant, low	Dark	4-6	2 1/2 x 2 1/2	Good
7	Dense & low	Dark +	6	3 x 3	Good
8	Medium-	Medium	6-8	3 1/2 x 2 1/2	Good
9	Dense & low	Light	6-8	3 x 2	Medium
10	Scant & low	Dark	6	3 x 4 1/2	Good
11	Ample	Dark	6-12	4 x 3	Good -
12	Scant	Dark	6	3 x 2 ^{deep int}	Good
13	Thin & low	Light	4-6	4 x 2 1/2	Fair
14	Scant & low	Light	4-6	3 x 2 1/2	Medium
15	Thin & tall	Light	6-10	4 x 2 1/2 ^{up int}	Good -
16	Ample	Dark	8-12	3 1/2 x 4 1/2	Good
17	Ample & high	Dark	10-12	3 1/2 x 3 ^{deep int}	Good
18	Ample, low & ^{dense}	Light	6-8	4 x 3	Good
19	Ample	Light	10	3 x 2 1/2	Good -
20	Abundant ^{thick}	Dark	10-14	3 1/2 x 4 1/2	Medium
21	Abundant	Dark	8-10	3 1/2 x 2 1/2	Medium
22	Medium dense	Dark	6-8	3 1/2 x 2 1/2	Medium -

Table XVI con. Foliage

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Variety of plant	Amount	Color	Length of leaflets	Size of resistance leaves to rust & etc	
23	ample	Light, very	8-12	4 X 2	Good-
24	Scarcely any	Light	8-12	4 X 2	Medium
25	Scant	Light	6-10	3 X 2	Medium-
26	Scant + low	Light	6-8	3 1/2 X 3	Medium-
27	Medium - dense	Dark	6-12	3 1/2 X 2 1/2	Medium-
28	Scant + low	Dark	6-8	3 X 2 1/2	Medium-
29	Scant very	Light	3-6	3 X 2	Medium-
30	Medium	Dark	8-8	3 X 2	Poor very
31	Abundant	Light	8-11	4 X 3	Poor
32	Low, leaves ^{cupped}	Light	9-12	3 X 2	Medium
33	Abundant	Light	9-12	4 X 3 1/2	Medium
34	Dense	Dark	8	3 X 2	Medium
35	Low, leaves ^{cupped}	Light	8-10	4 X 2	Medium
36	Medium	Dark	8-10	3 X 2	Medium
37	Dense, small	Light	7-10	3 X 2	Medium
38	Abundant	Light	9	3 X 2 1/2	Good
39	Ample	Dark	8	4 X 3	Good-
40	Medium	Dark +	7	4 X 3	Medium
41	Medium	Light + ^{very}	8-10	4 X 3	Medium
42	Medium	Dark	6-8	4 X 2 1/2	Poor
43	Low	Light	6	3 X 2 1/2	Good
44	Medium	Light +	8	3 X 2 1/2	Good.

In the selection of varieties the amount of foliage possessed by each plant is of vital importance. To feed and develop fruit the plant must possess not only an abundance of roots and leaves but must possess them in proper proportions. While it may be true that plants can be made to grow tops at the expense of ~~its~~ fruitfulness ~~it is~~, no such evidence is to be found in the experience or data gathered in the execution of this thesis work. The largest amount of foliage carried by any variety was shown by the Brandy wine. This variety also possesses the heaviest crowns and the most extensive root system. Also this variety is one of the best all purpose varieties tested. That some other variety with less foliage did better in some respects than did the Brandy wine is not



taken as proof that foliage was what limited the Brandywine yield. For illustration take the Monitor, whose foliage is tabulated as "scanty". It produced 4,857 quarts of 1+2+3 grade fruit per acre, while the Brandywine produced only 3,171 quarts or about two thirds as much. The unsolved problem arises: - To what higher heights of prolificness might the weak Monitor plant rise if it could be given the great strength and robustness of the Brandywine plant? Observations in the test bed and data upon the Monitor show clearly that it was at severe disadvantages during the excessively hot and dry days, at which times its fruit lay drying in the sun from lack of foliage while the Brandywine fruit was little affected. The relatively high position of the Brandywine leads to the conclusion that no varieties were limited in their

productiveness by an overproduction of foliage. At the same time there is an abundance of evidence that many varieties suffered severely from lack of foliage. A study of the data leads to the conclusion that strawberry growing is not a question of how many plants can be crowded upon an acre but how many large robust individual plants can be given sufficient feeding room to attain their maximum production of saleable fruit.

A comparison of table XVI, which shows the amount of foliage each variety possessed, with table XXIV, which gives all objections in a condensed form, shows that those varieties which had "scant" foliage are the varieties which yielded soft fruit. This is not a piece of imagination because the "grader" [Mr. Franklin] did not pick, and knew the varieties by number only.

Table XVII gives data upon the size of the crown and number of sub-crowns. The table shows to what extent the various varieties throw off sub-crowns, the range being one to ten. In comparing tables XVII with table XIX which arranges the varieties in the order of their total productivity, it will be found that there is no correlation between the number of sub-crowns and the productivity of the variety. One heavy yielder will have five or six sub-crowns while others have but two or three.

Table XVII

Crown.

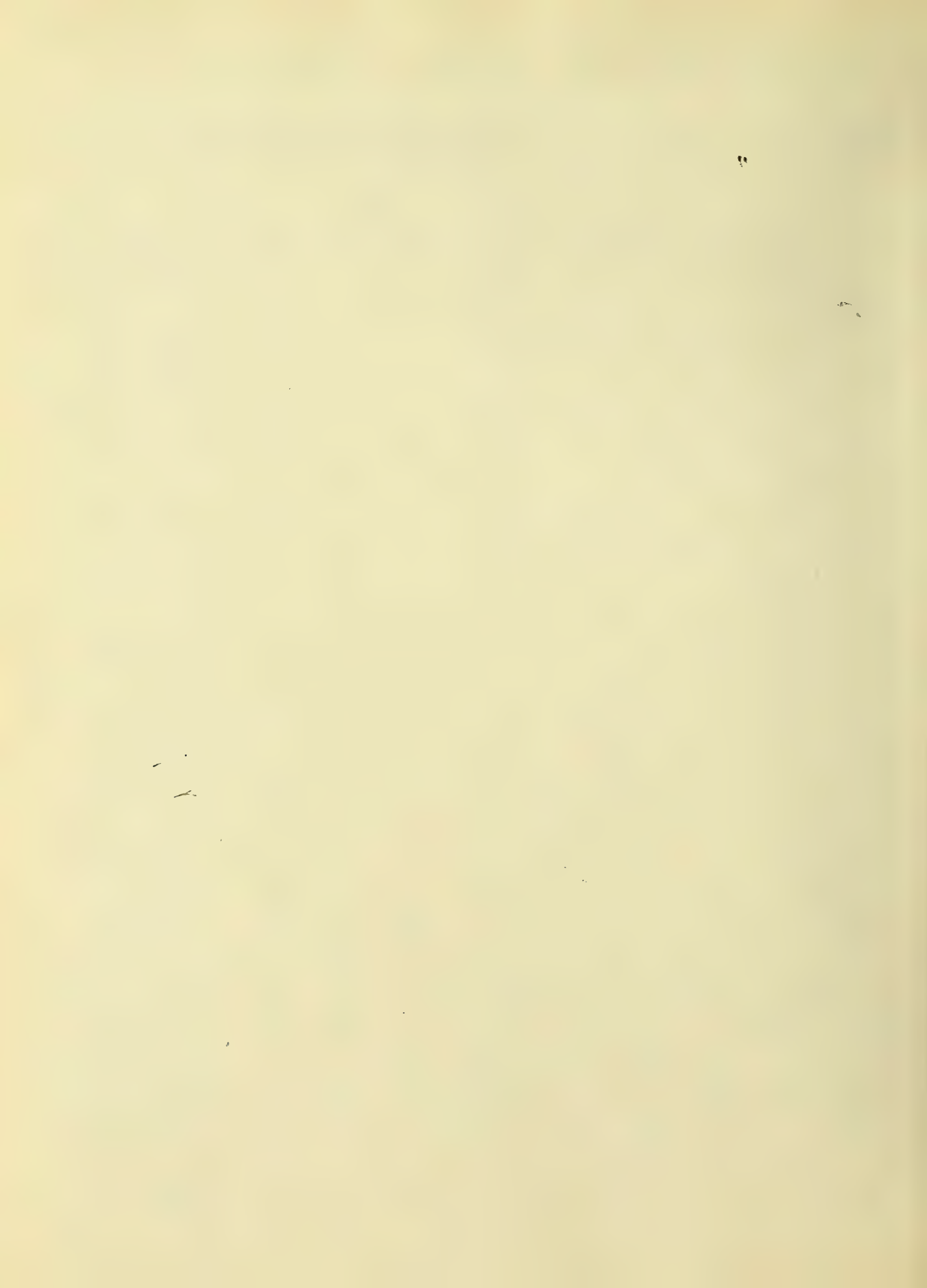
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Variety Number	Name of Variety	Diameter of Crown	Number of Sub Crowns	Comments.
1	Bulbach	$\frac{3}{4}$ inch	1 - 2	
2	Nick Chmer	$\frac{3}{4}$	2 - 3	
3	Miller	$\frac{1}{2}$	1 - 4	Small, very
4	W ^m Belt	$\frac{1}{2}$	1 - 4	Small
5	Warfield	$\frac{1}{2}$	1 - 3	Short
6	Bismark	$\frac{1}{2}$ - $\frac{3}{4}$	1 - 3	Compact
7	Wolverton	$\frac{1}{2}$	2 - 4	
8	Parson's Beauty	$\frac{1}{2}$ - $\frac{3}{4}$	1 - 4	Medium
9	Klondike	$\frac{1}{2}$	1 - 3	Small, very
10	Marshall	$\frac{1}{2}$	1 - 3	medium
11	Glen Mary	$\frac{1}{2}$ - $\frac{3}{4}$	1 - 6	Short + small
12	Monitor	$\frac{1}{2}$	1 - 5	Long
13	Aroma	$\frac{1}{2}$ - $\frac{3}{4}$	1 - 4	
14	Enormous	$\frac{1}{2}$ - $\frac{3}{4}$	1 - 2	
15	Haverland	$\frac{1}{2}$	1 - 3	Large
16	Splendid	$\frac{3}{4}$	1 - 3	Short
17	Johnson Early	$\frac{1}{2}$	1 - 6	Short
18	New York	$\frac{1}{2}$	1 - 5	Slender + ^{short}
19	Gandy	$\frac{1}{2}$ - $\frac{3}{4}$	1 - 3	Compact
20	Brandywine ^{ell}	$\frac{3}{4}$	1 - 3	Large
21	Brandywine ^{thick}	1	2 - 4	small
22	Amberland	$\frac{1}{2}$ - $\frac{3}{4}$	1 - 3	Short thick

Table XVII con. Crown

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Variety No.	Name of Variety	Diameter of Crown	Number of Sub Crowns	Comments
23	Rough Rider	$\frac{1}{2}$ - $\frac{3}{4}$	1 - 10	Short, ^{nail} compact
24	Clyde	$\frac{1}{2}$	1 - 3	Short, ^{nail} compact
25	Parker Earle Imp	$\frac{1}{2}$	1 - 4	Short
26	Sumple	$\frac{1}{2}$	1 - 3	Short + small
27	Crescent	$\frac{1}{2}$	3 - 5	Short + ^{nail} compact
28	Lovett	$\frac{1}{2}$	1 - 3	
29	Parker Earle	$\frac{1}{2}$	1 - 6	Short
30	Aug Luther	$\frac{1}{2}$	1 - 3	
31	Seaford	$\frac{1}{2}$	1 - 3	
32	Palmer	$\frac{1}{2}$	1 - 5	Small
33	Ridgeway	$\frac{1}{2}$	2 - 3	Very small
34	Kansas	$\frac{1}{2}$ - $\frac{3}{4}$	1 - 2	Strong
35	Michels' Early	$\frac{1}{2}$	1 - 5	Small
36	Up-to-Hute	$\frac{1}{2}$	1 - 3	Small
37	Bederwood	$\frac{1}{2}$	1 - 5	Short
38	Horner	$\frac{1}{2}$ - $\frac{3}{4}$	1 - 3	Long
39	Senator Hunt	$\frac{1}{2}$	1 - 3	Small
40	Hero	$\frac{1}{2}$	1 - 2	Short
41	Lady Thompson	$\frac{1}{2}$	1 - 3	Spiral
42	Excelsior	$\frac{1}{2}$	1 - 2	Small
43	Maximus	$\frac{1}{2}$	1 - 3	Small
44	Tennessee Pro.	$\frac{1}{2}$ - $\frac{3}{4}$	1 - 3	Round



Root System.

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It is evident that a plant without roots cannot thrive long and a plant with a surface root system is handicapped in resisting drought.

Table XVIII gives data upon the amount, radius, depth and character of the root systems of the various varieties. At the close of the picking season, three plants of each variety were dug around with a tile spade and the data in table XVIII obtained.

If the root systems of the first plants dug were not uniform in character, the digging proceeded until the character of the root system was known. The one obvious point brought out in obtaining this data was the close correlation between a large, vigorous deep root system and a correspondingly extensive & strong foliage. The term "medium" means the normal amount of roots - we

Table XVIII Root System. ¹¹⁴

Variety Number	Name of Variety	Amount	Radius inches	Depth. inches
1	Bubach	Medium-	10	13 ^{fibrous}
2	Nick Chmer	Medium	6-7	12
3	Miller	Scant, v. by	6-7	12 ^{not many} at 6
4	W ^m Belt	Medium-	6	12 ^{few}
5	Warfield	Scant	6-8	12
6	Bismark	Medium-	5-6	12
7	Wolverton	Medium+	8-10	12 ^{few}
8	Parson's Beauty	Medium+	6-7	10 ^{few}
9	Klondike	Medium-	6-8	14 ^{fine} ^{big as}
10	Marshall	Medium+	6-8	12
11	Glen Mary	Medium-	12	18 ^{fibrous}
12	Monitor	Medium+	8-10	12
13	Ceroma	Medium-	6-7	12 ^{few}
14	Enormous	Medium*	6-8	10
15	Haverland	Scanty	6-7	12 ^{fibrous}
16	Splendid	Large	10-12	14
17	Johnson Early	Medium+	8-10	14 ^{several}
18	New York	Large	12	14 ^{few}
19	Gurdy	^{very} Scanty	6	10
20	Brandywine ^{2nd}	Large, ^{very}	14	18
21	Brandywine ^{high}	Large, ^{very}	14	10
22	Cumberland	Scanty	no spread	10

Table XVIII con. Root System. 115

Variety Number	Name of Variety	Amount	Radius inches	Depth inches
23	Rough Rider	Medium	10	15
24	Blyde	Scant	6-8	12 few
25	Parker Curle Imp	Large	6-7	12 few
26	Sample	Scant	6-8	10 few
27	Crescent	Medium	8-10	12 few
28	Lovett	Medium	6-7	12 few
29	Parker Curle	Medium ⁺	7	14
30	Aug Luther	Medium ⁺	7	17
31	Seaford	Medium ⁺	8-10	14 few
32	Palmer	Medium	6-7	10
33	Ridgeway	Medium	8-10	10
34	Kansas	Medium	6-7	14 few
35	Micheli's Early	Large	4-6	16 few
36	Up-to-Hatch	Medium	6-8	12
37	Bederwood	Scant	6-7	12 few
38	Dorman	Large	6-7	14 few
39	Senator Dunlap	Medium ⁺	8-10	13
40	Hero	Scant	8-10	12 very few
41	Lady Thompson	Medium	6-8	15 several
42	Excelsior	Scant	4	14 few
43	Maximus	Scant	6-8	12 very few
44	Tennessee Pro.	Scant	4-6	10 few.

Table XVIII con. Root System 116

Variety	Name of Variety	Character of Root System
1	Buback	Descend at 25° . Small bunch of fibrous roots at surface
2	Nick Chmer	Well distributed. Majority - 6"-8"
3	Miller	A few long tap roots with small bunch of fibrous roots at top
4	Wm Belt	Not much spread. Bunch at surface.
5	Warfield	Mostly surface, not much below 6"
6	Bismark	Straight down, no spread, not many fibrous
7	Wolverton	Well distributed. Big tap roots
8	Parson's Beauty	Most at surface
9	Klondike	Roots large as turning needle
10	Marshall	Well distributed at 12"
11	Glen Mary	Thick bunch at top.
12	Monitor	Well distributed. Bulk in 1"-6"
13	Atoma	Quite a few at surface
14	Enormous	Not much spread. Most at surface
15	Haverland	Bulk - 1"-4"
16	Splendid	Well distributed, many fibrous, few in 1"-2"
17	Johnson Early	Well distributed & thick.
18	New York	Spread beyond foliage
19	Sandy	Straight down, few fibrous.
20	Brandywine	Big bunch 2" below surface
21	Brandywine	Roots = big as lead of pencil
22	Cumberland	Fibrous roots 12"-18" from crown
		Bulk - 3"-6" - fibrous.
		Mostly in a bunch

Table XVIII con. Root System ¹¹⁷

Variety Number	Name of Variety	Character of Root System
23	Rough Rider	Well distributed
24	Libbyde	Well distributed
25	Parker Earle Imp.	Well distributed Good amount of fibrous roots in bunch at top.
26	Sample	Slightly spreading.
27	Crescent	Majority go straight down
28	Lovett	Fairly well distributed many fibrous roots 1"-6"
29	Parker Earle	Fairly well distributed not many fibrous roots
30	Eng Luther	Long deep tap roots
31	Seaford	mostly between 1-4"
32	Palmer	In a bunch
33	Ridgeway	Fairly well distributed
34	Kansas	new in first 2" very much in a bunch
35	Michel's Early	many big roots.
36	Up-to-Hute	Straight down.
37	Bederwood	Well distributed
38	Dorman	Well distributed Bulk of roots = 1-4"
39	Senator Dunlap	Well distributed
40	Hero	Quite a few at surface.
41	Lady Thompson	In a bunch, bulk 1-3"
42	Excelsior	In a bunch, bulk 1-3"
43	Maximus	Several long tap roots Majority = 1-4"
44	Tennessee Pro.	In a bunch.

Total Productivity. 118

Table XVIII is the last of the data taken from the test bed. Table XIX begins the process of arranging the varieties in the order of their relative merits.

Table XIX arranges the varieties in their order of productivity regardless of the character of the fruit produced. These figures are taken from table V and, as before stated, these yields are figured upon a basis of 21,780 plants per acre. Monitor heads the list with 6,512 quarts per acre and Cumberland is at the foot of the list, yielding but 566 quarts or about one eleventh ($\frac{1}{11}$) as much as Monitor.

Table XIX. Varieties Arranged in order¹¹⁹
of Total Productivity.

Relative Order.	Variety Number	Variety Name.	Total Quarts per Acre.
1	12	Monitor	6512.22
2	33	Ridgway	6207.30
3	15	Haberland	5466.78
4	37	Beiderwood	5096.52
5	16	Splendid	4748.04
6	27	Crescent	4084.64
7	20	Brandywine ^{2ll.}	4051.08
8	4	W ^m Belt	4029.30
9	14	Enormous	3838.28
10	25	Parker Earle Imp	3659.04
11	30	Curry Luther	3659.04
12	11	Glen Mury	3550.14
13	17	Johnson Curry	3506.58
14	1	Bubach	3345.40
15	6	Bismark	3201.66
16	34	Klondike	2962.08
17	21	Brandywine ^{mil}	2962.08
18	31	Seaford	2885.76
19	2	Rich Ahmer	2720.00
20	39	Senator Dunlap	2613.60
21	2	Miller	2591.82

Table XIX Cor.

Relative Order	Variety Number	Name of Variety	Total Quarts per line.
22	28	Lovett	25 26.48
23	8	Parson's Beauty	24 37.36
24	5	Warfield	23 95.80
25	26	Sample	18 73.08
26	41	Lady Thompson	18 73.08
27	38	Dorman	18 51.30
28	42	Excelsior	18 41.30
29	23	Rough Rider	17 64.18
30	7	Wolverton	16 78.84
31	24	Lytle	16 78.84
32	44	Tennessee Pro.	10 89.84
33	27	Parker Earle	15 68.16
34	40	Hero	14 59.26
35	34	Kansas	13 72.14
36	43	Maximus	13 50.36
37	18	New York	13 50.30
38	10	Marshall	13 28.56
39	32	Palmer	12 19.68
40	13	Worcester	11 97.90
41	35	Michels Early	9 8.32
42	17	Gandy	7 36.54
43	36	Up-land	6 75.18
44	22	Cumberland	5 66.28

Varieties Producing First Grade Fruit.

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Table XX arranges the varieties ^{in order of} their relative productivity of fruit which exceeded two inches in diameter. This table shows which varieties produce the big berries so highly prized by amateurs and advertisers. This data is derived by multiplying "total yds." by the "Percent of grade 1" as recorded on each variety sheet. [see table V.]

Table XX. Varieties arranged in order of "first grade" Productivity.

Relative Order	Variety Number	Name of Variety	Quarts Per Acre, of 1st grade fruit.
1	4	Wm Belt	235.64
2	1	Bubach	50.28
3	3	Miller	25.71
4	11	Glen Mary	17.20

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Relative Amounts of Second Grade Fruit Produced by Varieties

Table XXI give the varieties arranged as to their relative productivity per acre of second grade fruit which includes all ^{perfect} berries one and one half to two $\frac{1}{2}$ -2 inches in diameter. It should be remembered that ^{fruit of} this grade is considerably larger than the average fruit on the market.

When it is a question of producing exhibition berries whether they be two inches or more in diameter or one and one half (1.5) or two inches in diameter the W^m Belt stands pre-eminently in the front with no close competitor.

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Table XXI Varieties Producing Second Grade Fruit.

Relative Order	Variety Number	Name of Variety	Quarts per Acre of Second grade fruit.
1	4	Wm Belt	629.57
2	1	Bubach	491.77
3	12	Monitor	286.53
4	2	Hick Chmer	111.52
5	38	Hornum	92.50
6	20	Brandy wine	81.02
7	28	Lovett	78.40
8	7	Wolverton	54.36
9	11	Glen Mary	49.70
10	31	Seaford	37.51
11	13	Urbana	33.54
12	33	Ridgeway	31.00
13	34	Kansas	20.58
14	10	Marshall	17.26
15	8	Parson's Beauty	17.06
16	44	Tennessee Pro	15.00
17	3	Miller	12.95

Relative Amounts of Third¹²⁴ Grade Fruit Produced.

Table XXII gives the relative amount of fruit per acre yielded by each variety which would grade as number three which includes all berries seven eighths ($\frac{7}{8}$) to one and one half (1.5) inches in diameter. Table XXII shows that this is the size of berry which most varieties produce most abundantly.

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Table XXII Varieties Pro-
ducing Third Grade Fruit.

Relative Order	Variety Number	Name of Variety	Quarts per acre of third grade fruit.
1	12	Monitor	4511.42
2	33	Ridgeway	3612.33
3	15	Haverland	3374.82
4	16	Splendid	3270.36
5	20	Brandywine ^{2^{ll}}	3090.71
6	11	St. Mary	2644.75
7	37	Bederwood	2527.61
8	17	Johnson Early	2264.87
9	6	Bismark	2253.72
10	14	Enormous	2223.14
11	31	Seaford	2178.73
12	7	Klonlike	2165.22
13	4	W ^m Belt	2083.14
14	39	Senator Huntley	2030.30
15	25	Parker Early Imp ^l	1924.63
16	21	Brandywine ^{mich}	1857.17
17	27	Crescent	1671.06
18	1	Buvarh	1657.31
19	3	Miller	1658.75
20	2	Nick Ahmer	1632.00
21	8	Parson's Beauty	1531.88

Rep. line Order	Variety Number	Table XXII Name of Variety	Con Quarts. per acre of third grade fruit.
22	30	Aug Luther	13 11.16
23	28	Lowett	13 87.30
24	5	Warfield	13 56.02
25	26	Sumple	13 22.33
26	41	Fairy Thompson	12 60.52
27	24	Clyde	11 50.08
28	40	Hero	11 23.43
29	38	Hornman	10 75.43
30	7	Wolverton	10 63.64
31	29	Parker & Co	10 44.48
32	13	Aroma	10 12.31
33	10	Marshall	7 40.57
34	26	Rough Rider	8 82.00
35	44	Tennessee Pro.	7 75.00
36	18	New York	7 01.90
37	19	Gundy	6 23.70
38	42	Excelsior	5 70.71
39	34	Kansas	3 53.18
40	22	Cumberland	3 51.04
41	43	Maximus	3 37.50
42	36	Up-to-Late	3 11.17
43	17	Michels' Early	2 71.11
44	32	Putmer	2 38.90



Relative Production of ¹²⁷ Grades One plus Two plus Three.

Tables XX, XXI and XXII give the amounts of first, second and third grade fruit each variety would yield per acre. The sum of these grades is the fruit which the progressive grower would ship to a select commercial trade. It includes grades one, two and three, and leaves out grades four and five which are second class stock and cull stock.

This includes all perfect fruit seven eighths ($\frac{7}{8}$) inches or more in diameter and excludes all fruit less than seven eighths ($\frac{7}{8}$) inches in diameter.

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Table XXIII Relative Production of varieties of Grades One, Two and Three.

Relative Order	Variety Number	Name of Variety	Quarts per acre of grades one, two and three.
1	12	Monitor	4857.85
2	33	Ridgeway	3673.41
3	15	Haverland	3374.82
4	16	Splendid	3270.36
5	20	Brandywine	3171.93
6	4	W ^m Belt	2957.14
7	11	Glen Mary	2712.20
8	37	Bederwood	2527.61
9	17	Johnson Early	2264.87
10	6	Bismark	2253.72
11	14	Enormous	2223.14
12	31	Seaford	2216.64
13	1	Bubach	2201.01
14	9	Klondike	2165.22
15	37	Senator Dunlap	2030.30
16	25	Parker Earle Imp.	1924.63
17	21	Brandywine ^{rich}	1857.17
18	2	Hubb Ahmer	1743.52
19	3	Miller	1687.10
20	27	Crescent	1671.06
21	8	Parson's Beauty	1548.76



Table XXIII con.

Relative Order	Variety Number	Name of Variety	Quarts per acre of grades one, two and three.
22	30	Aug Luther	1511.16
23	28	Lovett	1467.60
24	5	Warfield	1356.02
25	26	Sample	1322.33
26	41	Lady Thompson	1260.52
27	38	Wolman	1166.13
28	24	Clyde	1150.08
29	40	Hero	1123.43
30	7	Wolverton	1120.68
31	13	Uroma	1045.85
32	29	Parker Earle	1044.28
33	10	Marshall	967.48
34	23	Rough Rider	882.00
35	44	Tennessee P.O.	870.00
36	18	New York	701.90
37	19	Gundy	623.70
38	42	Excelsior	570.71
39	34	Kansas	393.76
40	22	Cumberland	367.04
41	43	Maximus	337.60
42	36	Up-to-Hute	311.17
43	35	Michels Early	271.11
44	32	Palmer	238.90



Other things being equal, table XXIII is the one from which the strawberry grower would make his choice of varieties. A comparison of tables XIX and XXIII shows that culls and second grade fruit forms a considerable proportion of many varieties. The total yield of Monitor is 6,512 quarts per acre while the yield of 1+2+3 grades is 4,857 quarts per acre. This leaves 1,655 quarts per acre of unprofitable culls and second grade fruit. Thus about twenty-five per cent of the crop is lost. With some other varieties as high as fifty per cent of the crop is lost. So far as size and quantity go, this table answers the question as to which varieties are best; but, as often stated, there are other important factors to be weighed. In order to place all these objections before the reader in a clear and diagrammatic manner table XXIV is constructed.

Summary of Total Objections. ¹³¹

Table XXIV gives the varieties according to the relative amounts of first plus second plus third grade fruit they yield.

Column ^{IV} is entitled "Saleable Fruit," which means grades one plus two plus three. This is not strictly correct, because grade four is saleable; but at the same time experience has taught growers that no profit is derived from such fruit. As a rule it just about pays for its handling.

Since this experiment was undertaken to separate the profitable from the unprofitable varieties it is considered best to not include grade four with "Saleable" fruit. Column ^{IV} shows very distinctly which varieties are best, from the standpoint of total quantity of big berries per acre. But that is ~~not~~ the only factor to be considered in selecting varieties. It

has been found that deficiencies in color, flavor, uniformity of ripening, amount of foliage and keeping qualities, one and all, do, to more or less extent, bar certain varieties, either because they limit the yield or render the fruit unmarketable. Column I gives the relative position of the varieties according to volume of saleable fruit. Column II gives the number of the variety. Column III gives the names of the varieties. Column IV gives the amount of ~~free~~ saleable fruit per acre of each variety. Column V carries a few crosses or checks which designate those varieties which are especially deficient in that particular. The size of the check is an index to the extent of the objection. The larger the check the greater or more vital the objection. Column VI shows that but few varieties have poor flavor. Column VII shows that but two or three



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varieties ripen very uniformly.
ly. Column VIII shows that
quite a few varieties are deficient
in foliage. A glance at Column
IX shows that something is rad-
ically wrong in that particular
or our standard is too high.

Most strawberries are good, salable
and appetizing when first picked.
Many berries that are picked
perish in transit and those which
do reach the consumer are often
in very poor condition. Keeping
quality is, in the majority of in-
stances, the weak character of the
strawberry. Transit or keeping
qualities of this fruit need first
attention.

Table
XXIV

Summary of Total Objections. 134

I Relating Fruit Con.	II Variety Number	III Name of Variety	IV Other Fruit = 1 + 2 + 3	V Col- or.	VI Flav- or.	VII Un- com- mon- ity of objec- tion	VIII Fruit age	IX Keep- ing Qual- ities
1	12	Monitor	4857	X	X		X	X
2	33	Ridgeway	3673					
3	15	Haverland	3394				X	x
4	16	Splendid	3280					x
5	20	Brandywine ^{Ill.}	5171					.
6	4	W ^m Belt	2957					.
7	11	Elen Mary	2712	x	x			x
8	37	Bederwood	2527	X	x	X	x	X
9	17	Johnson Early	2264	X		x		x
10	6	Bismark	2253	X		x	x	x
11	14	Enormous	2223				X	x
12	31	Leuford	2116			x		X
13	1	Bubuck	2201				x	.
14	9	Klonlike	2165			X		.
15	39	Senator Dunlap	2030					X
16	25	Parker Early Imp.	1924				X	X
17	21	Brandywine ^{Mich.}	1857					.
18	2	Nick Chmer	1743					
19	3	Miller	1677					x
20	27	Crescent	1671					x
21	8	Parson's Beauty	1548			x		.
22	30	August Luther	1511	x				x

Table
XXIV Con. Summary of Total Objections. 135

I	II	III	IV	V	VI	VII	VIII	IX
Religious Prison	Variety Number	Name of Variety	Is perfectly saleable Fruit - 17213	Col- or.	Flav- or.	Unif- ormity of Ripening.	Foil- age	Keep- ing Qual- ities.
23	28	Lovett	1467				X	X
24	5	Warfield	1356				X	
25	26	Sample	1322				X	
26	41	Lady Thompson	1260		X	x		x
27	38	Wohman	1166			x		X
28	24	Clyde	1150	X			X	X
29	40	Hero	1123					
30	7	Aug Luther	1120	x				x
31	13	Aroma	1045				x	
32	29	Parker Earle	1044				X	
33	10	Marshall	957				X	x
34	23	Rough Rider	882					.
35	44	Tennessee Pr.	810	X		x		X
36	18	New York	701					x
37	19	Gurley	623			x		.
38	42	Excelsior	570					.
39	34	Kansas	393			X		x
40	22	Cumberland	351	X		X		.
41	43	Maximus	337			x		X
42	36	Up-to-Hate	311					x
43	35	Michell's Early	271			x	x	X
44	32	Palmer	238			x	x	X

Table XXIV gives in condensed form the merits and demerits of each variety. Having the results of each phase of the experiment in one table the task of comparing and eliminating varieties is much simplified. This table expressed diagrammatically the extent of the merits or objections of each variety. The detailed reasons for these defects may be learned by referring to the various tables of data and descriptions.

It is quite evident that the Monitor, the heaviest bearer of large fruit is not the variety to select, because it is deficient in color, flavor, foliage and keeping qualities.

By referring to table VI on page 59 it will be found that ^{the} color ^{of Monitor} is tabulated as "Light," which means, as before stated, that that colored fruit is not the best type of ~~seller~~ and also that more or less deficiency in

keeping quality is correlated with a light color. In a part of the discussion upon table VI is this sentence: "Two magnificent yielders, the Monitor and Bellerwood, suffer on account of their poor complexion".

In column VI is placed another cross. This points out that something is wrong about its flavor. By turning to table VII on page 62 may be found this description of the Monitor's flavor: "Poor flavor, mild".

No objection to uniformity of ripening is registered in column VII. The reason for not registering an objection is found in table XI which describes the Monitor as follows, - "Underside ripens last yet fairly uniform". Though not perfect in this particular, yet the objection ~~is~~ not considered important enough to be taken into account.

In column VIII a very strong objection is raised against the character of the foliage. Turning to table XII the foliage of Monitor is designated as "Scant" in amount. In the introduction of this table - "Scant" - not enough to meet the demands of the fruit. The fruit of such varieties suffered severely in dry, hot times." The cross in column IX indicates that there are some very pronounced objections concerning the keeping qualities of the Monitor. Turning to the summary of table XII as it appears on page 91 the following reasons for the objection are to be seen. First, that the results were unsatisfactory 1+ of the four times the forty-eight hour test was tried. On page 89 we find this expression concerning the Monitor: "Some good, some poor." and on page 83 the expression:

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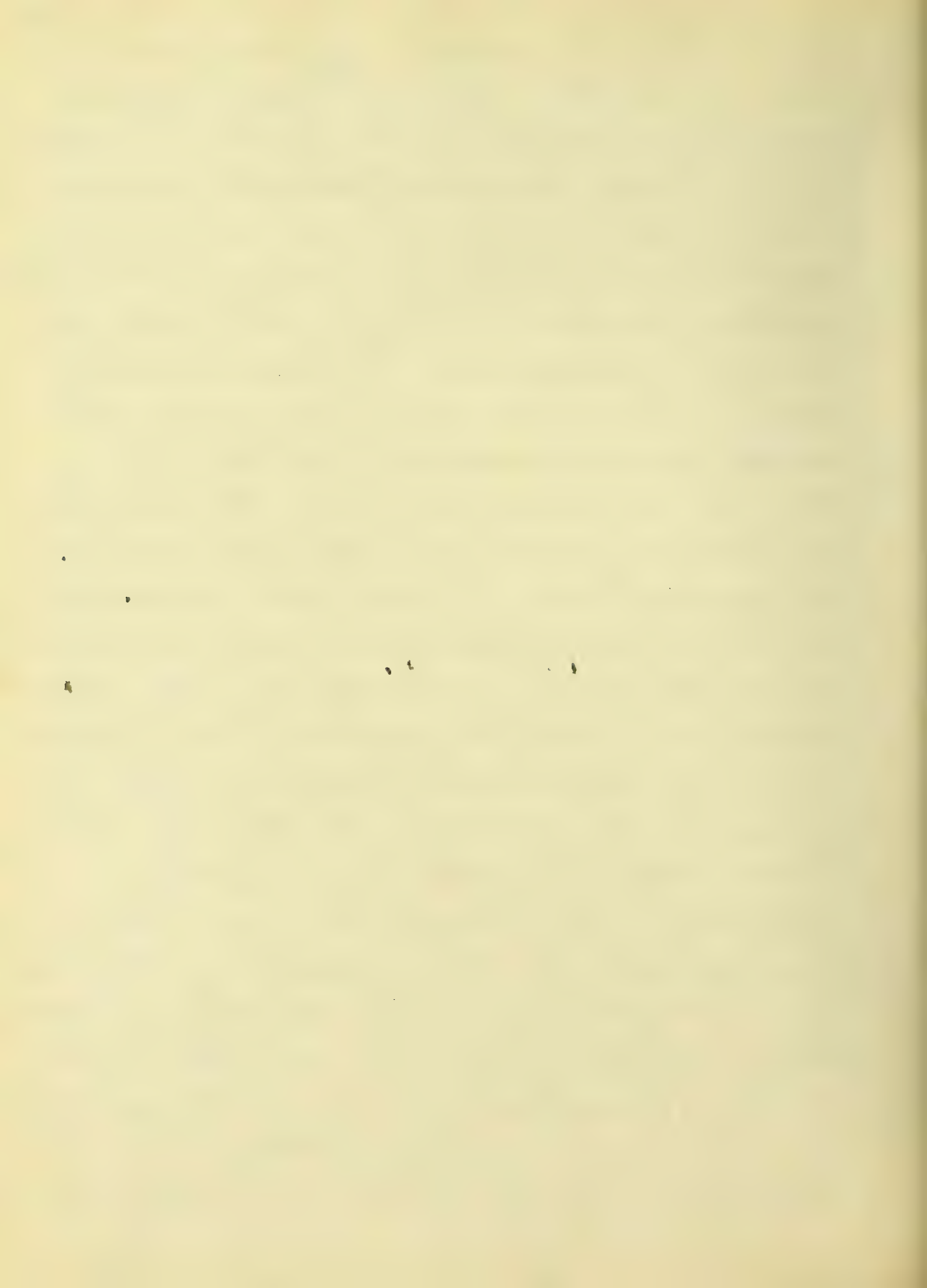
"Color fair, firm-". These expressions show that while these tests were not satisfactory, they would not justify the recording of two failures, so the compromise is expressed by "14".

Columns III and IV of the summary show that the major objection against the keeping quality of Monitor fruit is the uniformly soft condition in which the berries were always picked. Such an array of objections certainly justifies the elimination of the Monitor from the select list, even though it produced a larger amount of fruit than any other variety in the test.

In the same manner the conclusion is reached, that no objections to the Ridgeway are important enough to be registered in table XXIV and, excepting the Monitor, since it is the heaviest yielder of large berries it is given first place in the select list.

In the same manner as the Monitor and Ridgeway all varieties might be discussed. Yet it is thought ~~to be~~ unnecessary to multiply the amount of written matter by going into such details when the facts are so clearly expressed in table XXIV, and if wanted the reasons for ~~noting down~~ any objection can be had by referring to the table of data under which the objection is registered. For all practical purposes there was no need of tabulating the objections for those varieties which yielded less than twelve hundred (1200) quarts of fruit. A variety producing less than this much can seldom prove a commercial success, regardless of the quality of the fruit. Yet for the sake of completeness the entire lot was worked out.

The Marshall is a good example of this fact. In production it ranks thirty third, producing



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only 957 quarts of salable
fruit per acre. For quality, this
berry is without a superior and
the consumers ask for it con-
tinually, but refuse to pay
any more for it than for other
good varieties. It produces
only one fifth as much as the
Monitor and Ridgeway, yet
will sell for but a trifle or no
more than the fruit of other va-
rieties. For this reason the
Marshall is not popular
among growers.

Varieties Selected for ¹⁴² Distant or Local Markets.

Table XXV is the answer to the second part of the three fold object of this experiment, which was "to determine which varieties of strawberries are best adapted to meet the demands of a distant market." It has been decided, after considering the merits and demerits of all varieties, to admit eleven (11) varieties to this list. Of this list only two varieties stand without objections. Those two are the Ridgeway and the Hick Chmer. Yet, on account of the relatively low yield of the Hick Chmer it was placed seventh (7th) in the list because it produced only about one half as much fruit as the Ridgeway.

The only recorded objection to the Splendid is that its keeping quality is a trifle below the

desired standard. The same may be said of the Brandywine and the W^m Belt. The first four varieties in table XXV are in the three thousand (3,000) quart class. When the Senator Hunlaps is reached and those following the yield has dropped to two thousand (2,000) quarts or less per acre. Though the yield is good, the Klondike is placed at the bottom of the list because it is too uniform in ripening.

While table XXV is the answer to the second object of the experiment it also is the answer to the first object of the experiment; namely, "to determine which varieties of strawberries are best adapted to my local demands. Varieties that are good enough to ship certainly are good enough for the local market also."

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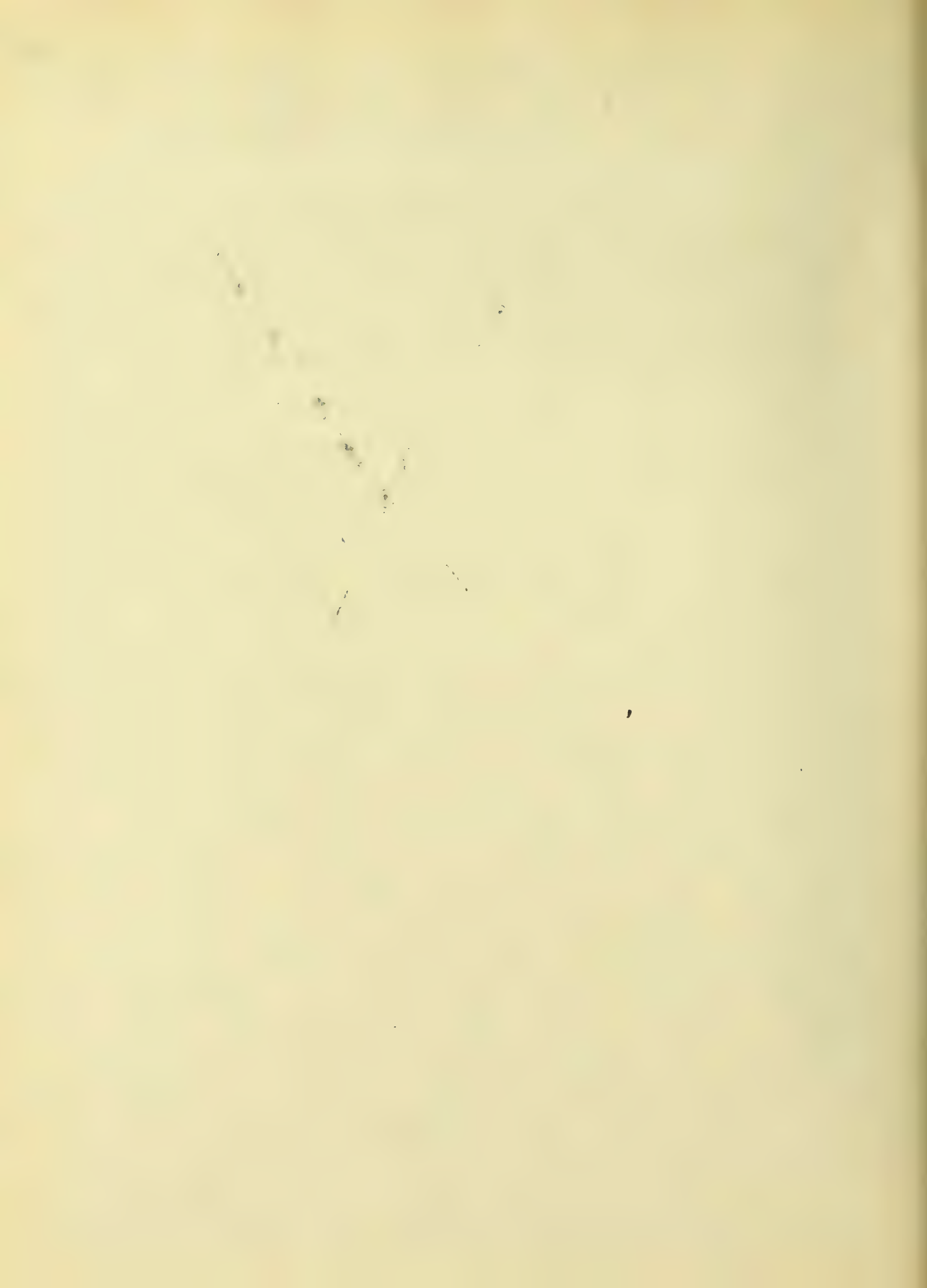
Table XXV Varieties Selected for Distant or Local Markets

Rank No.	Variety No.	Name of Variety	Yield, per acre of 1 + 2 + 3 fruit
1	33	Ridgeway	3673
2	16	Splendid	3290
3	20	Brandywine	3170
4	4	Wm. Belt	2937
5	37	Senator Dunlap	2030
6	21	Brandywine ^{Mich}	1857
7	2	Mich. Chmer	1743
8	3	Miller	1677
9	27	Crescent	1681
10	8	Parson's Beauty	1548
11	7	Klondike	2165

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Varieties Selected for
Local Markets Only.

While all the varieties of table XXV are good for the local market as well as for the distant market, there are other varieties which will serve local purposes just as well or perhaps better than some varieties listed in table XXV. Table XXVI is a list of these other varieties. In yield the Haverland and Glen Mary rank with the best varieties in table XXV. The Haverland is excluded from table XXV because, when a few excessively hot, dry days occur, its lack of foliage allows the fruit to "go soft" or "dry up", thus making it an unreliable shipper. In addition to poor keeping qualities the Glen Mary is deficient in color and flavor as is designated in table XXIV.



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Table XXVI Varieties Selected
for Local Markets Only.

Reproduction	Variety number	Name of Variety	yield per acre of 1 + 2 + 3 fruit
1	16	Howland	3374
2	11	Glen Mary	2712
3	14	Enormous	2223
4	1	Bulach	2101
5	25	Parker Earle Imp.	1924
6	31	Seaford	2116

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The Enormous is excluded from table XXV for the same reasons that the Haverland was excluded. The same is true of the Parker Earle Improved, and in addition the Parker Earle Improved is a light yielder. Babach and Seaford are uncertain shippers for reasons similar to those charged against the other varieties.

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Promising Varieties which
are Deficient in Foliage.

By comparing tables XXIV and XXVII it will be noticed that all the varieties listed in table XXVII are checked against in column VIII of table XXIV. From the performance of these varieties and from general observations it is firmly believed that with nitrogenous fertilizers to stimulate growth of plant, and foliage in particular, ~~that~~ these varieties will show decided improvement.

The Bubach is especially promising on account of the size and quality of the berry. The Haverland runs too small in size of berry but is a leader in quantity. Lack of foliage not only decreases the total yield and the percent of marketable fruit but makes the plant the easy and speedy victim

of drouth and all manner
of disease and insect attacks.
There is no telling but that
varieties almost at the end
of the list as arranged accord-
ing to yield are there because
and only because of scanty foli-
age.

Table XXVII Promising Varieties but Deficient in Foliage. ¹⁵⁰

Ranking Variety	Yards per acre	Name of Variety	Yield of fruit of 172 + 3
1	1	Bubuck	2201
2	15	Haverland	3394
3	14	Enormous	2712
4	20	Parker-Carl Imp.	1924
5	18	Lovett	1467
6	5	Warfield	1356
7	26	Sample	1022

Length of Picking Season. 151

The third object of this experiment was to determine which varieties are best adapted to extend the marketing season both previous to and after the main crop. In the district where this experiment was conducted the records for the last seven (7) years show that the marketing season lasted twenty days, and started June first to sixth according to the season. Table XXVIII gives a list of those varieties which were selected to be in the distant market, local market and promising variety lists. Opposite each variety is given the length of the picking season. These dates are not the number of days between which the first and last varieties could be picked, but such dates as between which marketable quantities could be

picked. In addition to the varieties in the above named lists the Excelsior is added because of its exceptional earliness. This variety is a light yielder, is very firm, dark colored, small and acid in flavor, but would do to use if the market will pay a good price for its production.

As recorded in table XXVIII, the date of earliest picking would be May 21 and the closing date would be June 24, thus making a marketing period of thirty-four (34) days. Considering that the regular season is June first to ~~twenty~~th, it is evident, by referring to the first eleven varieties in table XXVIII, that the marketing season can be lengthened considerably at the beginning of the season but very little after the picking of the main crop. For shipping purposes the Senator Huntup and Crescent



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Table XXVIII Length of Picking Season.

Row	Repet me. Posit. ion.	Variety mark over.	Name of Variety	Length of Season
1	33		Ridgeway	June 5 - 22
2	16		Splendid	June 2 - 22
3	20	21.	Brandywine	June 4 - 22
4	4		W ^m Belt	June 5 - 22
5	37		Senator Dunlap	May 25 - June 14
6	21	with.	Brandywine	June 5 - 24
7	2		Nick Chmer	June 5 - 19
8	3		Miller	June 5 - 19
9	27		Crescent	May 29 - June 19
10	8		Parson's Beauty	June 2 - 19
11	7		Klondike	June 5 - 24
12	15		Haverland	May 27 - June 16
13	11		Glen Mary	June 2 - 24
14	14		Enormous	May 29 - June 22
15	1		Bubark	June 2 - 19
16	25		Parker Earle's mp.	June 5 - 22
17	31		Seaford	June 2 - 16
18	28		Lobett	June 2 - 19
19	5		Warfield	May 27 - June 16
20	26		Jumple	June 2 - 16
21	42		Exelsior	May 21 - June 12

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would be chosen to open the season. Any other of the eleven varieties could be chosen to continue the season as they all close about together.

For local purposes the Havertand and Enormous could be added to the list and be utilized to begin the picking season. Any of the other varieties may be used to close the season.

Summary and Conclusions. ¹⁵⁵

1. The experiment reported in this thesis was planned to obtain more accurate knowledge as to which varieties of strawberries will best meet the demands of the market.

2. The results and findings of this experiment should be applicable to all typical and well tilled soils of the corn belt.

3. The season was an excellent one in which to make the experiment, because the weather was such as taxed the plants to their utmost. The rainfall during the picking season was unusually light and in addition there were two days of unusually dry, hot winds.

4. Many heavy yielders are not profitable.

5. Many of the heaviest yielders have poor color. Poor color is usually correlated with poor keeping quality.

6. Poor color is not always correlated with poor flavor, but poor flavor is almost always correlated with poor color. Most highly colored berries have good flavor.

7. With very few exceptions, all large berries tend to be hollow. Also, all large berries tend to be ununiform in shape, excepting the W^m But which tends to be fan shaped, and the Glen Mary which tends to be double when unusually large.

8. Some varieties are prone to remain ~~remain~~ white or green on the under side or tip after the upper side is apparently ripe, thus causing green fruit to be picked.

9. A sub fruit stem which is less than one inch long impedes rapid and efficient picking. Some sub fruit stems are tougher than necessary,

thus causing the work of picking to be unnecessarily laborious.

10. Main fruit stems of great length or unusual brittleness are objectionable because they expose fruit to the sunlight and break off too easily.

11. There is no correlation between the number of sub crowns and the productivity of a variety.

12. Lack of foliage is one of the principal limiting factors in the success of many varieties.

13. No evidence was found supporting the belief that some varieties produce foliage at the expense of their fruiting ability.

14. Varieties which have a scant amount of foliage may produce much fruit but not much marketable fruit.

15. There is a pronounced correlation between abundant foliage and extensiveness of root system, but there is no correlation between height of foliage and depth of root system.

16. The total yields varied between 6,512 and 566 quarts per acre.

17. W^m Belt is an easy first when large berries are wanted. Bubach, Muller and Glen Mary are also in the giant class.

18. The twenty varieties producing the greatest amount of fruit seven-eighths ($\frac{7}{8}$) inch or more in diameter rank as follows: Monitor, Ridgeway, Haverland, Splendid, Brandywine, W^m Belt, Glen Mary, Bederwood, Johnson Early, Bismark, Enormous, Seaford, Bubach, Klondike, Senator Hinlap, Parker Earle Imperial, Nick Chimer Miller, crescent and Pierson's Beauty. For their yield in quarts

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per acre and the relative position of other varieties see table XXIII on page 128.

19. Table XXIV on page 134 gives in condensed form the principal defects of each variety.

20. The varieties possessing the least number of faults or the greatest number of merits for distant marketing purposes take rank as follows:

Ridgeway, Splendid, Brandywine, W^m Belt, Senator Hunlap, Nick Chmer, Miller, Crescent, Parson's Beauty and Klondike.

21. In addition to the above varieties the following varieties may be used when the market is near by: -

Haverland, Glen Mary, Enormous, Bubach, Parker Earle Imperial and Seaford.

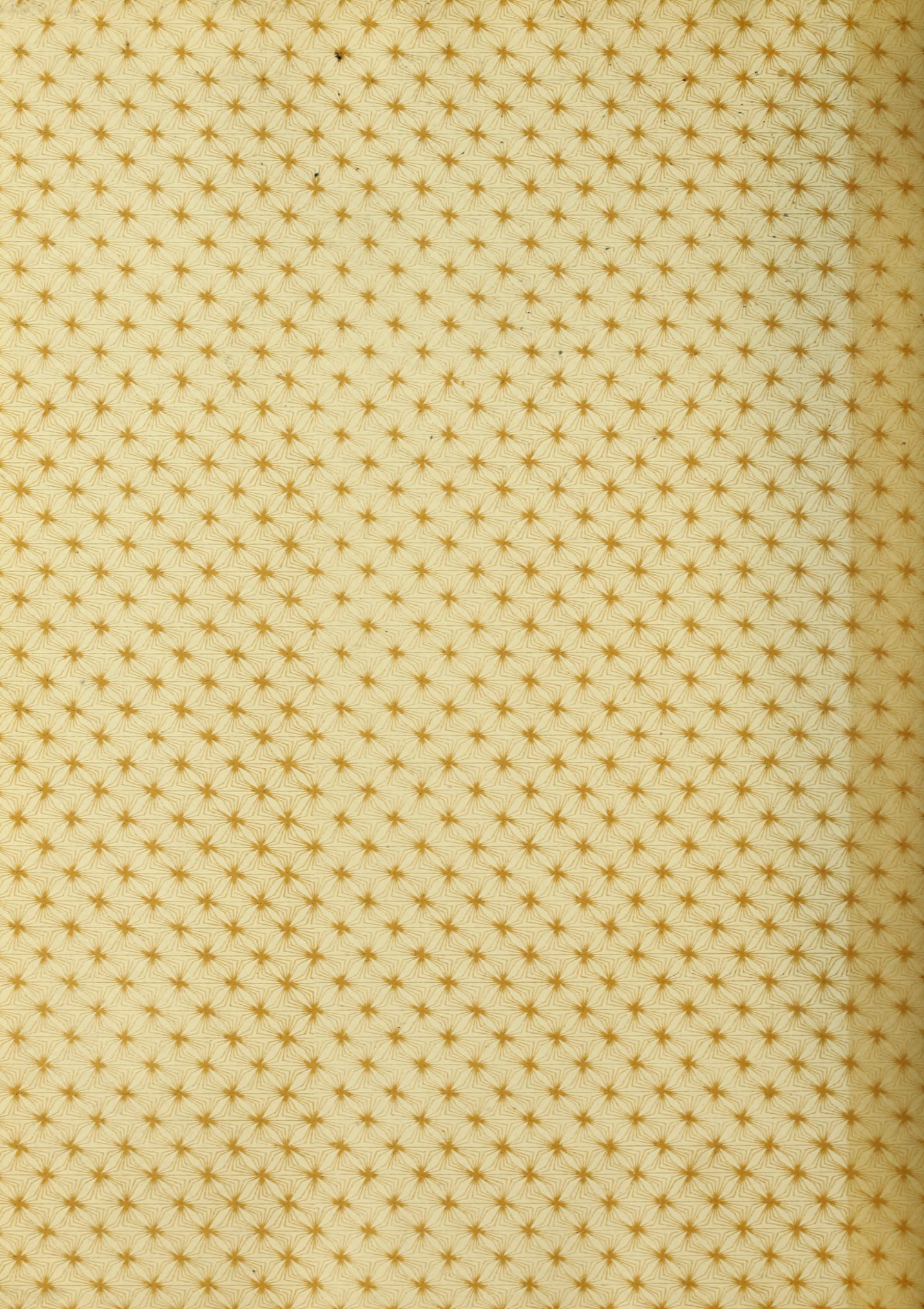
22. The following varieties lack foliage but show great possibilities. It is believed

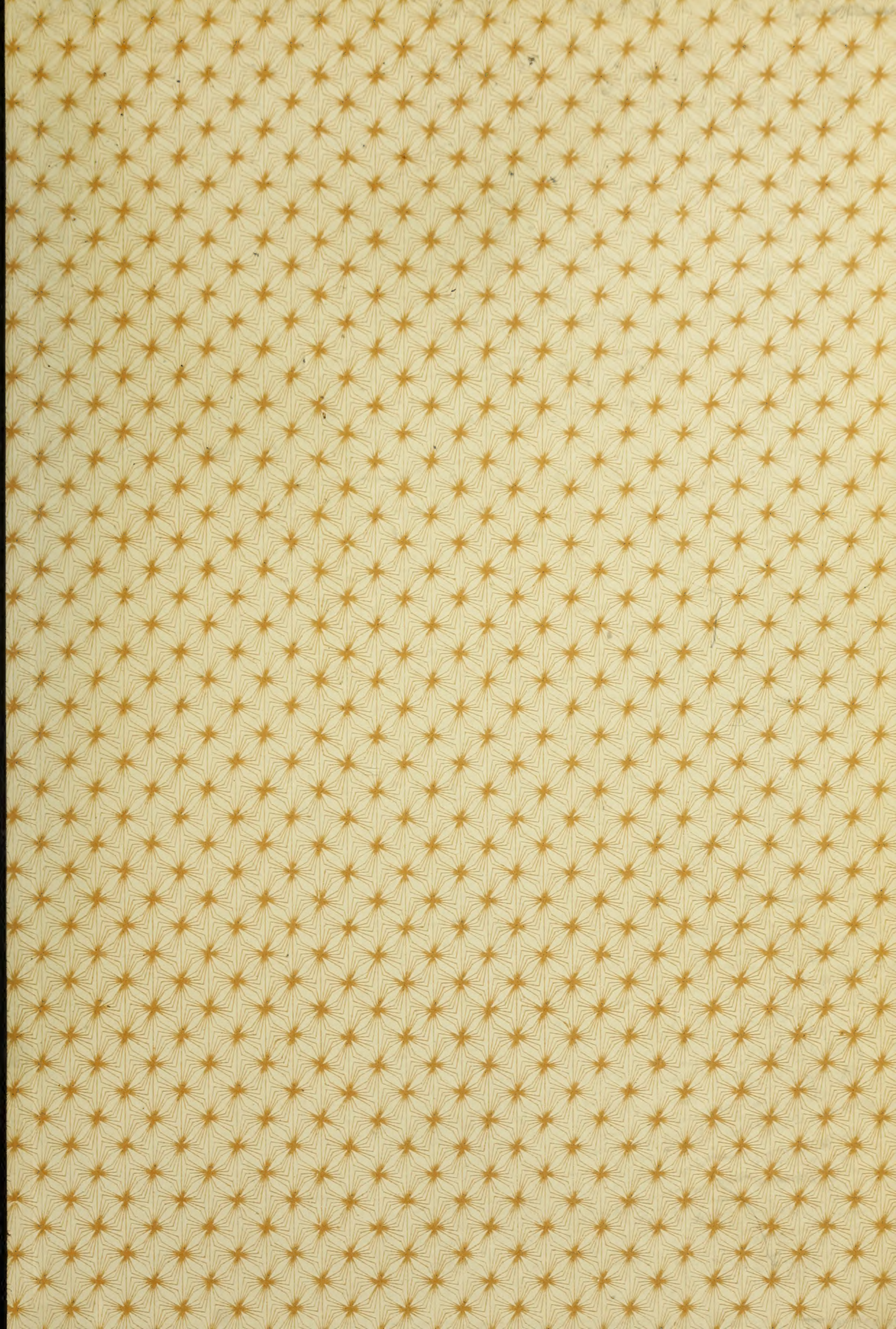
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that nitrogenous fertilizers will make these varieties much more useful and successful: - Bulbuck, Haverland, Enormous, Parker Earle Improved, Lovett, Warfield and Sample.

23. Excelsior is the earliest variety tested but it has too many defects to be grown upon a commercial scale. For distant marketing purposes the Senator Hunlap and Crescent are the best early varieties. For local marketing the Haverland and Enormous also can be used as early varieties. ~~Any~~ other of the varieties ~~as~~ listed in table XXVIII on page 153 may be used to complete the season. No one variety was found to be much later than several other good varieties. From the varieties ~~as~~ listed in table XXVIII, a picking season of thirty-four (34) days can be planned.

In this latitude the season¹⁶¹
would extend between May
21 and June 24.





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